July 2015

ACCELERATING ENERGY PERFORMANCE CONTRACTING IN SMALL AND RURAL COLORADO COMMUNITIES STUDY

FINAL REPORT

Merrill Group

COLORADO Energy Office

July 2015

This final research report was developed and prepared for the Colorado Energy Office by Merrill Group LLC, in partnership with Lotus Engineering and Sustainability LLC, and 9kft Strategies in Energy, LLC.

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Disclaimer
Some of the information in this report is based on opinions received through various interviews. Every attempt has been made to accurately represent the information shared by each interview participant.

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EXECUTIVE SUMMARY

The Colorado Energy Office's (CEO) Energy Performance Contracting (EPC) program is an exemplary model for the nation and for other state energy offices. Although the program has helped bring tens of millions of dollars in energy cost savings to over a hundred public jurisdictions across the state, the uptake of EPC in small and rural communities is lagging behind the uptake of EPC in larger and more urban communities. While this issue is not unique to Colorado, very little information on strategies to accelerate the uptake of EPC in small and rural communities is publicly available.

To help accelerate the uptake of EPC in small and rural communities, the CEO has contracted the Merrill Group to identify the benefits and barriers of EPC in small and rural communities and to identify potential strategies that may help support the adoption of EPC in small and rural communities, such as the aggregation, pooling, or bundling of EPC projects.

The Merrill Group completed an extensive study to identify the benefits and barriers of EPC and potential solutions for improvement. This report is the Task F deliverable and provides an overview of the entire study and final program recommendations. It is intended that this information will result in actionable steps by the CEO, by CEO's pre-qualified ESCO community, and by EPC financial institutions to help develop an attractive EPC offering for small and rural communities.

The CEO is well positioned to support the uptake of EPC in small and rural communities by leveraging the program's existing building blocks, which include a strong reputation with a program history spanning nearly two decades, dedicated third-party program support, a strong and diverse energy service company (ESCO) community, and success stories and lessons learned from past EPC projects.

To better understand this market, the Merrill Group researched dozens of definitions for small and rural. Various definitions are used by government entities, researchers, and policymakers and they can range from population density to geographic isolation to population size (common thresholds for rural are between 2,500 to 50,000 people). The Merrill Group chose definitions relevant to the CEO EPC program that align with the U.S. Census, the Colorado Department of Education, and potential funding and financing sources. Definitions are shown in Table 1.

Table 1. Small and Rural Definitions

	Small	Rural
City or Town	Pop. <5,000	Not located in an urban area
County	Pop.<20,000	Completely rural or a pop.<2,500
K12 School District	Based on size, distance from urban area, student pop.<1,000	Based on size, distance from urban area, student pop.<6,500
City or Town	Pop. <5,000	Not located in an urban area
County	Pop.<20,000	Completely rural or a pop.<2,500

Of the 141 public jurisdictions (out of 3,614) in the state that have completed an EPC through the CEO program, 35% have completed projects under $1 million, and of that 35%, 13% have completed projects under $500k.

Only 8% (11 out of 141) of total public jurisdictions that have gone through the CEO program are located in a rural community and only 2% ($10 million out of $447 million) of the total project investment has been completed in rural communities.[1] This indicates that there is strong market potential for EPC in rural communities and for small public jurisdictions. For more information on market potential for EPC in small and rural communities see Appendix A and for an overview of past CEO EPC projects see Appendix B.

To better understand program benefits and real and perceived program barriers as understood through the eyes of those intimately involved with the execution of EPC projects, the Merrill Group conducted a total of 36 telephone interviews and 2 in-person interviews with a variety of individuals whose organizations have direct experience working with small and rural communities. Examples included consultants, non-profit organizations, government organizations, rural and small communities, ESCOs, and financing agencies.

The most frequently noted benefits of the CEO's EPC program by interviewees include (in the order of cited value):

1. EPC's core concept, "*the fact that projects pay for themselves through savings is excellent!"*
2. Access to financing
3. Third-party support (typically from the CEO but sometimes third-party has been provided by a local non-profit organization such as Clean Energy Economy for the Region [CLEER]), "*CEO's involvement is imperative (for success)"*
4. Turn-key approach and the fact that "*things actually get done*"
5. Mechanism to improve and/or replace aging capital equipment and buildings
6. Ability to apply the mechanism to most public buildings
7. Use of model contracts
8. Ability for communities to be in compliance of TABOR
9. Starting the conversation around energy and water use and energy costs
10. Access to other EPC-related services

These benefits are core to the success of the program and have been widely marketed in the past and current program outreach. One interviewee summarized their experience as "(*EPC) was a great program for us. It is one of the highlights of my 17 years at the district. We had really good contractors and (ESCO) did a great job helping us write grants, it was a team approach and it worked well."*

Interviewees also cited instances in which EPC fell short of helping communities meet their needs. There were over 30 frequently identified barriers to implementing EPC within rural communities. The barriers listed in **bold** in Table 2 were cited at least four times by interview participants. See Appendix G for more information on how often these barriers were cited.

[1] All data regarding which public jurisdiction completed projects and their resulting investment was provided by the CEO and analyzed by Merrill Group.

Table 2. Most Frequently Identified Barriers

Financial	Technical	Programmatic	Other
Barrier present at or prior to project development			
• **Communities do not want to take on debt** • **Perception that EPC is too expensive** • High IGA costs • Concern that savings will not be met • Hesitant to dip into tax dollars • Shrinking tax base	• Perception that equipment doesn't need repair or replacement • Communities have no interest in advanced systems	• **Limited understanding of the process** • **Lack of staff resources** • **Mistrust of state government** • "We can do it on our own" mentality • There are alternatives to EPC • Contracts are not written for schools	• **Distance/time dissuades ESCO from travel** • **Lack of interest in efficiency** • **Feeling of isolation from Front Range** • Communities tend to love old buildings • Political climate changes • Tendency to focus on immediate needs • Inability for ESCO to connect with rural audience
Barrier during project implementation			
• **Difficult to access capital and financing** • Lack of funding support	• **No long-term maintenance support** • **Small project scope** • Equipment broke after installation • Superficial scope and M&V to control costs	• Too much paperwork • Majority of savings are stipulated • Consequences of decisions not known • Limited understanding of M&V process	

In addition to understanding general program benefits and barriers to small and rural communities, Merrill Group investigated how different mechanisms, such as project aggregating, pooling, and bundling could impact project success. The terms aggregation, pooling and bundling are rarely, if ever, defined and are often used inter-changeably. However, for the purpose of this study, the following definitions were created in order to bring clarity to the analysis:

- **Aggregation** is defined as the aggregating of multi-jurisdictional energy efficiency and/or renewable energy projects into one ESCO contract and one Financing Contract. The definition aligns with the intent of Senate Bill 14-186.
- **Pooling** is defined as the pooling of multi-jurisdictional energy efficiency and/or renewable energy projects into one ESCO Request for Proposal (RFP). However, after the ESCO is selected each public jurisdiction enters into a separate ESCO contract and Financing Contract.
- **Bundling** is defined as a single public jurisdiction bundling all of their smaller departments under one ESCO and Financing Contract. This is already a regularly used structure by the CEO's EPC program.

Although these types of projects have been attempted throughout the history of the CEO's EPC program, few successes have been realized. See Appendix C for a summary of past and current aggregating, pooling, and bundling project activities in Colorado and throughout the US. To fortify their position within the existing program each mechanism would require changes to the CEO program.

It is recommended that the CEO support pooled and bundled EPC projects, but not pursue or support aggregated projects. Several State Energy Offices, including the CEO, have successfully supported pooled and bundled projects, increasing their ability to serve rural and small communities. In the past pooled projects have been driven by ESCOs or a local non-profit organization; however with the CEO support it is likely that additional pooled projects will move forward. Recent history and program research have indicated that these projects can be quite successful with minor revisions to the current program structure (see Appendix D). In addition, pooled projects can be enhanced with the assistance of a regional program expeditors and/or a shared professional services program.

It is not recommended that the CEO pursue the aggregation of projects. While there are some potential benefits from aggregating projects, the hurdles to successfully aggregating projects are large and in some cases insurmountable. For example, every legal and financial expert interviewed questioned the legality of cross collateralizing equipment[2] between public jurisdictions. Therefore, the legality of aggregation is unclear and unlikely. Additional and sometimes insurmountable financial issues and consideration that are triggered by aggregating projects include cash flow requirements, credit rating effects, guarantee disputes (which could lead to additional measurement and verification (M&V) requirements and costs), issuance date requirements, and differing funding sources.

Additional substantial hurdles that would need to be overcome in order to successfully aggregate projects including: 1) reworking contracts and creating new contractual documents (i.e. interagency agreements); 2) setting up programmatic structure to address Senate Bill 14-186 requirements; and 3) logistical requirements (i.e. timing projects to begin at the same time).

See subsection Overview of Aggregating, Pooling, and Bundling and Appendix D for more information on all of the hurdles for implementing an aggregated project.

Final Recommendations

While interviews were focused on identifying barriers to increasing EPC in small and rural communities, many of these conversations quickly turned into discussions regarding solutions to these program barriers. The image presented in Figure 1 illustrates the various program recommendations cited by interview participants to address these barriers. The size of the word demonstrates its relative level of importance as determined by the frequency in which it was cited during interviews. For example, 31 recommendations were made to improve outreach and education compared to 6 recommendations made to train local resources.

[2] If multiple jurisdictions come together to finance a project they are in essence cross collateralizing each other's equipment because if one public jurisdiction defaults then the other entity's equipment is at risk to be reclaimed by the lessor.

Figure 1. Program Recommendations

This image suggests that a majority of CEO's efforts should focus on (1) outreach and education, followed by (2) develop partnerships, (3) update model, (4) provide financial support, (5) establish local support, and (6) train local resources. These efforts will benefit small and rural communities, as well as the program as a whole.

Upon compiling further research from other state practices, general CEO EPC program best practices, and the Energy Services Coalition (ESC) Colorado chapter, Merrill Group has compiled the following recommendations that will help strengthen the EPC program, bolster EPC projects, and help ensure the success of EPC projects implemented in small and rural communities. Each recommendation brings a different level of commitment and a different magnitude of impact to the EPC program for small and rural communities. **Error! Reference source not found.**provides a summary of recommendations.

Table 3. Comparison of Recommendations

Recommendation	Potential Lead	Key Partners	Level of Time Commitment	Level of Cost Investment	Expected Timeline	Level of Impact
Outreach and Education						
Develop "Introduction to EPC" package	CEO	ESCOs, financiers, non-profit organizations, state organizations, local contractors	Significant	Minimal	6 months to 1 year	Significant
Increase the visibility of EPC	CEO	ESCOs, financiers, non-profit organizations, state organizations, local contractors	Significant	Minimal to Moderate	6 months to 1 year	Significant
Strengthen or Develop Key Partnerships						
Leverage partnerships to build rapport	CEO	Various	Significant	Minimal	3 to 6 months	Significant

Recommendation	Potential Lead	Key Partners	Level of Time Commitment	Level of Cost Investment	Expected Timeline	Level of Impact
Update the EPC Model						
Demonstrate potential energy savings	CEO, ESCOs	ESCOs	Moderate	Minimal	Ongoing	Moderate
Modify existing CEO program template documents	CEO	ESCOs	Minimal	Minimal	1 to 3 months	Minimal to Moderate
Encourage complementary services	CEO, ESCOs	ESCOs, non-profit organizations	Moderate	Minimal	1 to 6 months	Moderate to Significant
Provide Financial Support						
Develop "Funding and Financing Support" package	CEO	CEO, financiers, non-profit organizations, state agencies	Moderate	Minimal	3 months	Moderate
Establish Local Support						
Establish a local presence	CEO, ESCOs	ESCOs, financiers, non-profit organizations, local contractors	Significant	Minimal	6 months to 1 year	Moderate
Train Local Resources						
Strengthen local maintenance and operation expertise	CEO, ESCOs	ESCOs, DOLA, Veterans for Green Jobs, Colorado Workforce Development, Energy Efficiency Business Coalition	Significant	Minimal to Moderate	6 months to 1 year	Minimal to Moderate
Target New Public Jurisdiction Sectors						
Target new public jurisdiction sectors	CEO	WWTPs, WTPs, CDPHE, RMWEA, RMSAWWA, CHA, CAHED, NAHRO	Significant	Minimal	6 months to 1 year	High
Pooling Projects						
Help create, support and reimburse regional expeditors	CEO	Non-profit organizations, state organizations, local governments	Significant	Significant	Ongoing	High
Start a shared professional services program	CEO	Non-profit organizations, state organizations, local governments, local contractors	Significant	Significant	Ongoing	Moderate

Using the table above, the Merrill Group suggests the following program recommendations in order of highest impact and lowest level of cost commitment. It should be noted that while some of these recommendations may require a significant level of time commitment, the level of program impact was determined to be significant enough to justify the anticipated time investment.

Top-level priority program recommendations include:

1. Develop an "Introduction to EPC" package
2. Increase the visibility of EPC.
3. Leverage partnerships to build rapport with communities and to create successful EPC projects.
4. Target new public jurisdiction sectors
5. Help create, support and reimburse regional expeditors

Mid-level priority program recommendations include:

6. Demonstrate the potential for energy savings at the project's onset
7. Encourage complementary services to the traditional EPC model
8. Develop a "Funding and Financing Support" package
9. Establish a local presence
10. Start a shared professional services program

Bottom-level priority program recommendations include:

11. Modify existing CEO program template documents
12. Strengthen local maintenance and operation expertise

STUDY BACKGROUND AND OBJECTIVE

As part of CEO's mission to improve the effective use of all Colorado's energy resources and the efficient consumption of energy and water in all economic sectors, CEO is committed to helping all public jurisdictions become more energy efficient and save on utility costs. As such, the CEO is looking to accelerate the uptake of EPC in small and rural communities. Merrill Group was hired to identify the benefits and barriers of EPC in small and rural communities and to identify potential tools and strategies that may help support the adoption of EPC in small and rural communities, such as aggregation, pooling, and bundling of EPC projects.

In concert with the CEO, the Merrill Group has already provided the following deliverables:

- Task A: Task A has several deliverables
    - Small and Rural Definitions Report provides definitions for small and rural communities (see Appendix E)
    - Excel-based spreadsheet that categorizes over 3,500 public jurisdictions (if applicable) as rural, small, or neither (see Appendix F for a snapshot)
    - Final Report is a summary of: a) research defining aggregation, pooling, and bundling; b) past and current project aggregation, pooling, and bundling projects; c) analysis of Colorado's EPC program; and d) an assessment of market potential.
- Task B: Final report providing an analysis of: a) the financial, technical, programmatic, and other requirements of aggregating, pooling, and bundling projects (see Appendix D); b) summary of stakeholder engagement process; c) analysis of various scenarios for aggregating, pooling, and bundling projects; and d) recommendations about a best approach.
- Task C: Final report providing an analysis of the benefits and barriers (real and perceived) to implementing EPC projects in small and rural communities and a summary of preliminary program recommendations to overcome identified barriers (see Appendix G for an in-depth analysis of barriers and solutions for implementing EPC in small and rural communities). Task C also included a review of potential funding sources (see Appendix H) and literature review (see Appendix I).
- Task D: Final report providing a comparative analysis and detailed description of each preliminary recommendation for program enhancement.
- Task E: PowerPoint presentation describing the study objective, process, and preliminary recommendations. Presentation to the Energy Services Coalition on June 26th, 2015.

This report is the Task F deliverable and provides an overview of the entire study and final program recommendations. Program recommendations incorporate feedback received by the ESCOs, financial lenders, the CEO, and the CEO's program consultants, which was provided during the Task E PowerPoint presentation. The final program recommendations are designed to accelerate the uptake of EPC in small and rural communities and further the effective use of pooling and bundling.

It is intended that this information will result in actionable steps by the CEO, by CEO's pre-qualified ESCO community, and by EPC financial institutions to help develop an attractive EPC offering for small and rural communities.

Summary of the Engagement Process

List of Interviewees

A total of 36 telephone interviews and 2 in-person interviews were conducted with a variety of individuals whose organizations have direct experience working with small and rural communities and/or have direct experience working with legislation and financing that supports small and rural communities.

Table 4. Interview List

Rural Partner and/or Rural Representative	Rural Community	ESCO	Financing Agency
1. Becker Stowe Partners LLC 2. Brett Johnson (Formerly with the State Treasurers Office) 3. Clean Energy Economy for the Region (CLEER) 4. Colorado Department of Education (CDE) 5. CDE's Rural Education Council 6. Colorado Municipal League 7. Community Office for Resource Efficiency (CORE) 8. Consensus 9. Department of Local Affairs (DOLA) 10. EcoAction Partners 11. Educational Institute of Cooperative Services 12. Kansas State Energy Office 13. Massachusetts State Energy Office 14. New Mexico State Energy Office 15. Nevada Energy Office 16. SGM, Inc. 17. Special District Association 18. State of Colorado Attorney General's Office 19. Trident Energy Services, Inc.	20. Chaffee County 21. Montezuma-Cortez School District Re-1 22. Rio Grande County 23. Town of Limon 24. Town of Ouray 25. Eaton Re-1 School District	26. 360 Energy Engineers 27. Ameresco 28. Apollo Solutions Group 29. Chevron 30. Honeywell 31. Iconergy 32. OpTerra	33. AAIG 34. Alpine Bank 35. El Pomar Foundation 36. David C Smith 37. Saulsbury Hill Financial, LLC 38. San Luis Valley Federal Bank

A majority of the interview participants were representatives from organizations that served small and rural communities and/or participated as a stakeholder in a small and rural EPC project. These organizations were ideal interview participants because not only did they understand EPC, they were directly vested in helping to create a successful project for the community that they serve.

All of the rural community participants partook and/or attempted an EPC project and these communities were able to provide first-hand experience on the barriers and benefits that they had experienced. They were also able so share how EPC was perceived in their communities and with their decision-making bodies and share their experience with the day-to-day details of an EPC project. The communities also provided feedback on the roles of the ESCOs and of third-party support, including the CEO.

Half of CEO's qualified ESCO community was represented in these interviews. Their feedback provided technical and programmatic insight as to how an EPC project is implemented. They were also able to provide open and honest feedback that others may be hesitant to share.

Select financing organizations were interviewed to better understand the financial implications of small EPC projects and from aggregating, pooling, or bundling projects, which is a potential strategy to increase scope size of small projects. When appropriate, small financing agencies were asked about their willingness to engage with small and rural communities.

See Appendix J for more information on individual interviewees.

PROGRAM BUILDING BLOCKS

The CEO's program has many strong building blocks that support its potential to increase activity with small and rural communities.

PAST PROJECTS

The CEO has supported 141 Colorado public jurisdictions with their EPC projects for over $447 million in investments. Many of these public jurisdictions completed "small" projects under $1 million and/or are located in rural counties. Using the Census's 2013 Rural-Urban Continuum codes for classifying counties as metro, neither, or rural, Table 5 shows that the CEO has supported 11 entities in rural counties for a total of approximately $10 million dollars in energy and water efficiency upgrades.

Table 5. Number of Entities That Have Completed an EPC through CEO[3]

	# of Entities that have done an EPC	% of Total Entities	Total EPC investments	% of Total EPC Investment
Metro	48	34%	$ 197,571,372	44%
Neither	62	44%	$ 105,934,293	24%
Rural	11	8%	$ 10,089,495	2%
Multiple	20	14%	$ 133,782,391	30%
Total	**141**	**100%**	**$ 447,377,551**	**100%**

All of the rural projects were completed between 1997 and 2014. Two projects were completed prior to 2008 while the remaining nine projects were completed after 2008 with the most recent project being the Town of Limon in 2014.

Table 6. Public Jurisdictions Total Project Investment

Project Size	# of Projects	% of projects	Total Investment	% of projects
Projects Over $10 million	9	6%	$ 160,818,052	36%
Projects between $5 and $10 Million	12	9%	$ 89,130,774	20%
Projects between $1 and $5 Million	71	50%	$ 169,737,632	38%
Projects between $500k and $1 Million	31	22%	$ 21,946,074	5%
Projects below $500k	18	13%	$ 5,745,019	1%
Grand Total	**141**	**100%**	**$ 447,377,551**	**100%**

Forty-nine out of the 141 public jurisdictions have completed projects under $1 million. However, as shown in Table 6, these projects only accounted for 6% of the total EPC investment done in the State.

[3] Multiple is defined as entities that are located in multiple counties. The definition for neither can be found in the next subsection: Overview of Rural and Small Definitions.

Strong Reputation

Consistently we heard interviewees mention how important the CEO's EPC program was in furthering EPC in all communities. Although interviewees provided a lot of feedback on how to improve the program, overall the CEO EPC program was well-received and considered best-in-class.

Need for Third Party Support

Many interviewees highlighted the great benefit the EPC program played by providing invaluable third-party support that most of these communities do not have in-house. CEO's very established program is well suited to play this role for energy efficiency and renewable energy work in rural and small communities.

Energy Service Company (ESCO) Community

The ESCO community in Colorado is very strong and competitive. The wide range of ESCOs includes billion dollar publically traded companies to privately held, brand new companies with seasoned staff. This has created a very competitive and creative EPC industry in Colorado. Smaller, less established ESCOs are generally more willing to complete smaller EPCs in order to gain experience in the competitive Colorado market and avoid competition. Larger, more experienced firms have sometimes completed innovative projects to help differentiate themselves from their competitors, or take-on small projects to gain a foothold in the Colorado market.

OVERVIEW OF RURAL AND SMALL DEFINITIONS

There are dozens of definitions for small and rural. In addition, the terms small and rural are used interchangeably. These definitions are created by various government entities, researchers, and policymakers to help distinguish rural from urban areas. The definitions can range from population density to geographic isolation to population size (common thresholds for rural are between 2,500 to 50,000 people). Whether or not a community fits within various definitions directly affects whether or not they are eligible for both federal and local funds. As such, Merrill Group provided a deliverable titled the Small and Rural Definitions Report (see Appendix E) to the CEO. In this analysis several definitions were provided that aligned with the various funding sources that rural and small communities in Colorado could access to support an EPC.

Each funding source was then included as a column in the Excel spreadsheet deliverable titled *Public Jurisdiction Spreadsheet* that lists all public jurisdictions in Colorado. A snapshot of the database can be found in Appendix F. When a public jurisdiction fit within the program's definition of rural, the public jurisdiction is marked as rural in the spreadsheet. Note that all of the definitions are only for cities, towns, school districts, and counties. They did not apply to special districts, which can cover multiple towns, regions, and unpopulated areas. However, if a special district is within only one county, and under the definition of rural the entire county applies, then the special district was marked as rural as well to note that it is eligible for funding.

Per conversations between the CEO and Merrill Group, the following definitions, which align with the 2010 Census, will be used for urban and rural for cities and towns:

- **Urban** is an area comprised "of a densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. To qualify as an urban area, the territory identified according to criteria must encompass at least 2,500 people."
- **Rural** encompasses all population, housing, and territory not included within an urban area.

Per conversations with Jeanna Paluzzi, CEO EPC Program Manager, it was deemed appropriate to use the Census's 2013 Rural-Urban Continuum Codes to classify any public jurisdiction that is not a city or town as metro, rural, or neither. The classification scheme distinguishes metropolitan counties by the population size of their metro area, and nonmetropolitan (including rural) counties by degree of urbanization and adjacency to a metro area. Each county in the U.S. is assigned one of the nine codes. Counties are assigned codes in the spreadsheet titled *Public Jurisdiction Spreadsheet*. **Metropolitan** counties are counties that are coded 1, 2 or 3:

- 1 is defined as counties in metro areas of 1 million population or more
- 2 is defined as counties in metro areas of 250,000 to 1 million population
- 3 is defined as counties in metro areas of fewer than 250,000 population

Neither is defined as counties that are coded 4, 5, 6 or 7:

- 4 is defined as a county with an urban population of 20,000 or more, adjacent to a metro area
- 5 is defined as a county with an urban population of 20,000 or more, not adjacent to a metro area
- 6 is defined as a county with an urban population of 2,500 to 19,999, adjacent to a metro area

- 7 is defined as a county with an urban population of 2,500 to 19,999, not adjacent to a metro area

Rural is defined as a county coded as 8 or 9:

- 8 is defined as a county that is completely rural or less than 2,500 urban population, adjacent to a metro area
- 9 is defined as a county that is completely rural or less than 2,500 urban population, not adjacent to a metro area

The following definition for small was mutually agreed upon by the CEO and Merrill Group and is based off what size opportunity would be considered small due to low building stock and population size for all public jurisdictions except for K12:[4]

- **Small** is a city or town with less than 5,000 people and county with less than 20,000.

For K12 it was decided to use the terms used by the Colorado Department of Education for **rural** and **small rural:**

- A Colorado school district is determined to be **rural** depending on the size of the district, the distance from the nearest large urban/urbanized area, and having a student enrollment of approximately 6,500 students or less.
- **Small rural** districts are those districts meeting the same criteria for rural, but also have a student population of less than 1,000 students.
- **Urban** school districts encompass all districts that are not rural or small rural.

See Appendix K for an overview of the population changes many of these communities are experiencing.

[4] Note: While population is not always a perfect indicator of utility spend, it is one of the better indicators.

SUMMARY OF MARKET POTENTIAL

In general, there seems to be strong market potential for EPC in rural communities and for small public jurisdictions. Of the 114 public jurisdictions (out of 3,614) in the state that have completed an EPC through the CEO program, 35% have completed projects under $1 million, and of that 35%, 13% have completed projects under $500k. Only 8% of total public jurisdictions that have gone through the CEO program are located in a rural community and only 2% of the total project investment has been completed in rural communities. Refer to Appendix A for a more detailed analysis.

Many rural areas have aging buildings that need repair such as jails, schools, and courthouses and several of these market areas have been relatively untapped. Rural areas may also operate water and/or wastewater treatment plants and healthcare clinics that are not maintained to optimize energy efficiency. Specific focus areas may include fleet management, process plants, and street lighting.

Many of these communities do not have the local resources to make these repairs and/or pursue more efficient improvements. The lack of capital and/or access to capital supports the need for an accessible financing mechanism like EPC. In addition, the lack of in-house expertise and a strong and qualified local contractor base indicate that these communities would benefit from ESCO assistance.

Several communities across the state are also interested in renewable energy projects. Recent EPC projects in Front Range communities have demonstrated that excess savings (in the form of utility bill-credit payments and renewable energy credits) can potentially cover the cost of more capital-intensive measures.

Although a few rural communities and organizations suggested that the current EPC model is not an ideal program for small and rural communities, a majority of the respondents stated that EPC is a useful tool for rural communities and that it may need only a few revisions to make it an ideal tool. In some cases EPC is the only tool available to communities to make building changes. As one community explained, "*We are very poor and very rural, EPC is a good model for us*".

Table 7 highlights the market penetration of EPC's by most common market segment for the entire United States in 2013, Table 8 analyzes the market penetration by market segments for Colorado.

Table 7. Market Penetration Rates for EPC throughout US[5]

Market Segment	U.S. Census Region				
	Northeast	Midwest	South	West	U.S.
K-12 Schools	45%	40%	42%	30%	42%
State / Local	39%	30%	30%	45%	30%
Federal	27%	28%	25%	27%	28%
Universities/Colleges	25%	25%	23%	30%	25%
Public Housing	20%	15%	18%	18%	18%
Health/Hospitals	10%	10%	15%	15%	10%
Private Commercial	10%	6%	8%	9%	9%

[5] *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry* (2013) by Stuart, E., Larsen, P., Goldman, C., and Gilligan, D. http://emp.lbl.gov/publications/current-size-and-remaining-market-potential-us-energy-service-company-industry

Colorado lags in market penetration compared to the national average for public housing and health/hospitals. In fact according to the data provided by the CEO, there have been no completed projects in either market segments.[6] Many small and rural communities have health/hospital facilities and public housing. As such, this might be a potential sector for the CEO to focus on when attempting to expand the program into rural and small communities. Health and hospital facilities are an especially promising market due to their generally high-energy usage per square foot. In addition, water and wastewater facilities provide another promising market due to their high-energy usage, increasing water costs, and their ability to access multiple funding sources.

Table 8. Market Penetration Rates for EPC throughout Colorado

	Number of Entities that have done an EPC	Number of Public Jurisdictions in Colorado	Market Penetration
City/Town	29	270	11%
County	22	64	34%
Higher Ed	18	29	62%
K-12 School	57	184	31%
State Government Agency	7	20	35%
Special District	8	3,047	0.26%
County, Municipal, and Multijurisdictional Housing Authorities	0	*114*	0%
County Recreation Districts/Park and Recreation Districts	4	*62*	6%
County Hospital Authorities/Health Districts	0	*39*	0%
Library Districts	3	*55*	5%
Water Authorities/Water and Sanitation Districts/Water Districts	1	*231*	0.43%
Other	0	*2,546*	0%
Total	**141**	**3,614**	**4%**

[6] According to Linda Smith, CEO EPC Program Manager from 1989-2007, the Energy Office did a hospital project in Walsh with an ESCO in the 90s and in the 2000s they targeted housing authorities (county-owned facilities) but did not succeed in developing a project.

Overview of EPC Barriers and Solutions of Working in Small and Rural Communities

Although the EPC program has and is providing significant value to several small and rural communities, there are instances in which EPC falls short of helping communities meet their needs. There were over 30 frequently identified barriers to implementing EPC within rural communities. Although these barriers were cited by interview participants it should be noted that some of these barriers are "perceived" barriers and may not actually be true program barriers. For instance, many interview participants noted that small and rural communities have difficulty securing financing for small EPC projects. While this has happened in the past, conversations with ESCOs and financing agencies have indicated that financing is available for small EPC projects.

To eliminate possible biases, the Merrill Group organized program barriers by how often these barriers were cited in individual interviews (see Appendix G for a complete list). The barriers listed in **bold** in Table 9 were most frequently cited by interview participants. These barriers were then categorized as financial, technical, programmatic, or other barriers. While a majority of these barriers are present prior to the development of an EPC project, a few of the barriers may arise or become more evident during the actual implementation.

Table 9. Most Frequently Identified Program Barriers

Financial	Technical	Programmatic	Other
Barrier present at or prior to project development			
• **Communities do not want to take on debt** • **Perception that EPC is too expensive** • High IGA costs • Concern that savings will not be met • Hesitant to dip into tax dollars • Shrinking tax base	• Perception that equipment doesn't need repair or replacement • Communities have no interest in advanced systems	• **Limited understanding of the process** • **Lack of staff resources** • **Mistrust of state government** • "We can do it on our own" mentality • There are alternatives to EPC • Contracts are not written for schools	• **Distance/time dissuades ESCO from travel** • **Lack of interest in efficiency** • **Feeling of isolation from Front Range** • Communities tend to love old buildings • Political climate changes • Tendency to focus on immediate needs • Inability for ESCO to connect with rural audience
Barrier during project implementation			
• **Difficult to access capital and financing** • Lack of funding support	• **No long-term maintenance support** • **Small project scope** • Equipment broke after installation • Superficial scope and M&V to control costs	• Too much paperwork • Majority of savings are stipulated • Consequences of decisions not known • Limited understanding of M&V process	

Overview of Aggregating, Pooling, and Bundling

The terms aggregation, pooling and bundling are rarely, if ever, defined and are often used inter-changeably. However, for the purpose of this report, the following definitions were created in order to bring clarity to the analysis.

- **Aggregation** is defined as the aggregating of multi-jurisdictional energy efficiency and/or renewable energy projects into one ESCO IGA contract and one Financing Contract. The definition aligns with the intent of Senate Bill 14-186.
- **Pooling** is defined as the pooling of multi-jurisdictional energy efficiency and/or renewable energy projects into one ESCO Request for Proposal (RFP). However, after the ESCO is selected each public jurisdiction enters into a separate ESCO IGA contract and Financing Contract.
- **Bundling** is defined as a single public jurisdiction bundling all of their smaller departments under one ESCO IGA contract and one Financing Contract. This is already a regularly used structure by the CEO's EPC program.

Table 10 is an overview of the general characteristics of aggregating, pooling, and bundling projects.

Table 10. How Each Structure Interacts with the CEO Program

	Aggregating	Pooling	Bundling
Number of Public Jurisdictions	Multiple	Multiple	One
Number of ESCO Contracts	One	Multiple	One
Number of Contracts with Financial Institution	One	Multiple	One
Aligns with the intent of Senate Bill 14-186	Yes	No	No
Creates a larger project or pool of projects to attract an ESCO	Yes. However can create a lot of additional work for ESCO to organize	Yes: creates an incentive for an ESCO to work within community. However can create a lot of additional work for ESCO to organize.	Yes
Creates a larger project to attract financing	Yes; however many legal and programmatic issues arise with structure. Unclear if possible.	No	Yes

Requirements for a Successful Aggregating, Pooling, Or Bundling Program

Table 11 provides a summary of the potential changes the CEO program would need to make in order to aggregate, pool, and/or bundle projects. A more thorough analysis of each financial, technical, and programmatic consideration can be found in Appendix D.

Table 11. Aggregation, Pooling, and Bundling Interaction with CEO EPC Program

Aggregating	Pooling	Bundling
Review of Financial Requirements		
• Legality of cross collateralizing between multiple public jurisdictions is unclear and remains a political hurdle • Cost of issuance remains high because lender needs to do a credit analysis on each public jurisdiction and bond council • Lots of work for lender to figure out different payment structures • Unclear on how to deal with varying credit ratings of different agencies • Timing of projects is a large issue for setting rates for financing package • Cross-collateralization can be a political barriers	• Smaller projects result in a higher cost of issuance • Lender needs to do a credit analysis of each public jurisdiction • Smaller projects might limit the amount of interested lenders	• Adds a little bit of work to lender to ensure all departments have signed off, various funding sources are compatible (i.e. enterprise and general fund requirements), and unique payment schedules are created.
Review of Technical and Programmatic Requirements		
• Need to rework all contracts to allow for multiple agencies to sign • Need to create an Interagency Agreement for jurisdictions to sign to agree upon terms and responsibilities • Need to create addendum to address each jurisdiction's specific laws • Lots of added work to ESCO to have all parties sign off and start projects on similar timelines • ESCO would need to spend money to have legal counsel understand new contract documents • Very time consuming to organize leading to additional costs for CEO • Expensive to have Attorney General and/or private law firm rework contracts	• RFP template updated but no changes to other documents • Lots of added work to ESCO to have all parties sign off and start projects on similar timelines. (Note: could be very little ESCO time if CEO or non-profit organization is organizing) • Very time consuming to organize leading to additional costs for CEO	• No change needed to contracts (just provide separate schedules); however, revising IGA agreement exhibits and EPC schedules may be helpful • Adds a little bit of work to ESCOs to ensure all departments have signed off
Additional Considerations		
• Hard to have all projects move forward within same time period • Senate Bill 14-186 requirements, such as DOLA payments, could be triggered • Multiple motivations	• Hard to have all projects move forward within same time period • Multiple motivations	• Hard to have all projects move forward within same time period • While this structure helps smaller department projects be completed it is not generally applicable for smaller or rural jurisdictions

Analysis of Senate Bill 14-186

Overview of Senate Bill 14-186

Senate Bill 14-186 specifies that the CEO may (within existing resources) aggregate energy efficiency projects to create a larger portfolio of diverse efficiency projects with costs totaling an amount that may attract private sector investment. The bill was signed by Governor Hickenlooper on June 6, 2014. The intent of the bill is to help support rural and small jurisdictions that often lack assets or building inventory to attract ESCOs or capital by combining their projects into a dynamic, multidimensional portfolio. In addition the bill created the *Efficient School and Communities' Performance Contracting Fund* which once large enough can be used to pay for IGAs of projects that cannot access financing.

In order to implement the aggregated portfolio envisioned by SB14-186, in practice, projects would be aggregated into one project with one contract with an ESCO and one contract with a lender. Benefits and barriers of this structure are listed throughout this deliverable. This bill also triggers the involvement of the DOLA. The financing for an aggregated project must include a cost of issuance fee of no more than 1% payable to DOLA to be credited to the newly created *Efficient School and Communities' Performance Contracting Fund*.

Once there is sufficient money in the fund, in the event a community entity's efficiency project is not financed, DOLA, in collaboration with the CEO, may award a grant to a community entity for a reimbursement of a portion of the IGA completed by the community entity or prequalified ESCO. All awarded grants must be prioritized by need. The bill allows DOLA to retain 5% of 1% of project debt issues for administration. For $3,000,000 in project debt, that's $28,500 for grants and $1,500 for administration. The 1% fee was considered by lenders as negligible, however it was noted that some small and rural jurisdictions that are already cash strapped might balk at the 1% fee. In addition, some interviewees noted that the amount of grant funds created will not cover a significant proportion of the IGA costs.

Decision to Not Include Aggregation as a Tool for EPC

After completing extensive research, interviews, and conversations with the CEO it has been decided that aggregation is not a viable tool and/or strategy for expanding EPC into rural and small communities. There are several insurmountable and many substantial hurdles that would need to be overcome in order to successfully aggregate projects. In addition, the legal experts and financial institutions that were interviewed all questioned the legality of aggregating projects due the cross collateralizing of equipment[7] between public jurisdictions.

[7] Per the Financial Bid Package provided by the CEO, "the lessor will be secured by the customer's obligation to pay the lease payments, which are subject to annual appropriations and by a security interest in the equipment purchased for the energy and water savings measures to be installed by ESCO, which can be salvaged without damage to the facility to which such equipment is attached." If a public jurisdiction defaults a lessor is legally allowed to reclaim the equipment installed through the EPC. If multiple jurisdictions come together to finance a project they are in essence cross collateralizing each other's equipment because if one public jurisdiction defaults then the other entity's equipment is at risk to be reclaimed by the lessor.

Additional financial issues and consideration that were triggered by aggregating projects include the following:

- **Cash flow requirements:** Aggregation will most likely lead to higher interest rates which can affect the scope of work. Because the entire project must remain cash flow positive, it is possible that some entity's savings might cover the shortfall of other entities. It is unclear if this is legal for one public jurisdiction to essentially "bankroll" another through their savings; certainly there are political limitations to this proposal. Lastly, and perhaps most importantly, the entities would need to decide beforehand how to split up the payment streams and commit to paying their proportion (whether or not the savings are realized). Public jurisdictions that enter this structure would have to create a formal agreement (i.e. through interagency agreement) between themselves.
- **Credit Rating Effects:** Per Senate bill 14-186 requirements, several public jurisdictions would aggregate their energy conservation measures into one project to attract financing. In order to finance the project a lender would look at all public jurisdictions credit ratings. As such, if one public jurisdiction has a poor credit rating then the entire pool is affected; potentially hindering some partnerships from moving forward. A higher interest rate means less energy conservation measures can be completed because cash flows must remain positive.
- **Guarantee disputes**: If each public jurisdiction wants to understand whether or not savings are being made they will need to do M&V for every year of the project leading to additional and sometimes substantial costs.
- **Issuance date requirements:** All projects would need to move forward around the same time to ensure that they could all benefit from the quoted interest rate. If they did not move forward during that time the lessor would need to adjust the rate for the entire pool.
- **Differing funding sources:** By blending multiple jurisdictions and departments into one project various funding sources can sometimes be incompatible.

Additional hurdles include: 1) reworking contracts and creating new contractual documents (i.e. interagency agreements); 2) setting up programmatic structure to deal with Senate Bill 14-186 requirements; and 3) logistical requirements (i.e. timing projects to begin at the same time). However, the most notable and perhaps insurmountable hurdles were for financing an aggregated project.

Due to these hurdles it was deemed that aggregating projects (if legal) would add substantial costs to the CEO, ESCO community, and public jurisdictions. As such, aggregation was not included in the list of tools and strategies to increase the usage of EPC in small and rural communicates in this report.

UNIVERSAL EPC PROGRAM TOOLS AND STRATEGIES

The following identifies recommended program tools and strategies that should be pursued for all EPC projects including pooled, bundled, and stand-alone projects. Each strategy synthesizes feedback from interview participants conducted during the Task B and C efforts. The CEO is encouraged to pursue each of the following strategies in entirety or to take on major components of each strategy.

The image presented in Figure 1 illustrates the various program recommendations cited by interview participants. The size of the word demonstrates its relative level of importance as determined by the frequency in which it was cited during interviews. For example, 31 recommendations were made to improve outreach and education compared to 6 recommendations made to train local resources.

Figure 2. Program Recommendations

This image suggests that a majority of CEO's efforts should focus on (1) outreach and education, followed by (2) develop partnerships, (3) update model, (4) provide financial support, (5) establish local support, and (6) train local resources. The following tools and strategies will strengthen the EPC program, bolster EPC projects, and help ensure the success of EPC projects implemented in small and rural communities.

PERFORM EXTENSIVE OUTREACH AND EDUCATION

IDENTIFIED NEED

The CEO is encouraged to develop a detailed and extensive outreach and marketing campaign and promote EPC throughout the state. This effort can help overcome program barriers that include:

- Perception that EPC is too expensive
- Concern that savings will not be met
- Limited understanding of the process, including the M&V phase
- Mistrust of state government
- "We can do it ourselves" mentality
- Lack of interest in advanced building systems
- Perception that equipment does not need to be fixed until it no longer works

- Other vehicles to efficiency may be more appropriate than EPC
- Tendency to focus on immediate needs

In addition, several interview candidates stated that established relationships built on trust and an understanding of the community's needs are critical to making in-roads with small and rural communities.

Recommended Action Steps

At a minimum, we recommend the following outreach and education action steps.

1. Develop an "Introduction to EPC" package

Create an "Introduction to EPC" electronic package that includes outreach and marketing material, EPC program education material, and additional EPC program documents. This package would be presented to participating communities at the onset of each project. This information should readily be available on CEO's website. The three different subtasks below address educational materials for different phases of the EPC process for a public jurisdiction. The first set of documents is specifically to introduce a public jurisdiction to EPC, the second is for helping a public jurisdiction better understand the process to see if it makes sense for them, and the last is for a public jurisdiction that is moving forward with a project.

a. Expand the scope of existing outreach and marketing material.

Merge outreach and marketing materials that describes top program benefits, a visual presentation of the process, comparisons against other models (discuss TABOR implications), and rural specific success stories with the existing Standards for Success and the EPC program brochure.

Design the information so that it is simple and easy to remember. Consider high-level steps and emphasize that the CEO is a community partner throughout the entire process. Target marketing material to different key players of the process including: communities, local financiers, local contractors, and local non-profit organizations. Lastly, share this information with key partners and leverage their existing outreach platforms.

b. Develop EPC program education material.

We recommend developing the following educational materials that explain the process in simple and easy to understand terms and sharing them with key partners:

- Educational materials describing the program process in detail, the savings guarantee and the M&V process, EPC costs versus other methods, and how EPC debt is different than traditional debt. Consider providing calculations on the costs of waiting to do upgrades.
- Guidance document/information sheet that discusses EPC pricing versus other potential models, including a frank discussion on project costs (i.e., ESCO overhead and profit, open book pricing, etc.) and program expectations.
- Guidance document/information sheet that describes how a community can retain project savings after completion (i.e., discuss long-term maintenance, building operations, commissioning, etc.) and sets reasonable expectations for project performance.

c. Provide EPC program management guidance.

Several potential program management documents that could be beneficial and made readily available on the CEO website include:

- An EPC document management document, based on existing resources.
- An EPC project awareness sign-off sheet so that participating communities can acknowledge that they understand each step of the process.

Develop a step-by-step process that is easy for communities to track and record received paperwork such as contracts, key milestones, reports, change orders, and major decisions that may have been communicated verbally and/or over email, based on the model developed by the Department of Energy, the National Renewable Energy Laboratory and the Hawaii Energy Office. Include project expectations with each step as necessary.

2. Increase the visibility of EPC.

Get the word out about EPC as often as possible and make sure that all major community organizations are aware of its potential to help upgrade facilities through reduced operating costs.

a. **Promote outreach and marketing materials.**

We recommend presenting success stories and the "Introduction to EPC" package wherever and whenever possible, including social media, newsletters, email blasts, CEO-hosted webinars, CEO-hosted workshops, and conferences. In addition, when working with communities, emphasize that the CEO is an EPC partner to the communities and use rural-specific terminology, i.e., consider topics such as energy security when talking about energy efficiency and renewable energy technologies.

Develop a marketing calendar of scheduled conferences and other events hosted by partner organizations. Identify all conferences that may include potential community decision-makers such as facility operations, superintendents, city/town managers, county administrators, finance officers, attorneys, and purchasing agents. Conferences may include: Northeastern Colorado Manager conference, Colorado Municipal League district meetings, Colorado Association of School District Energy Managers conference and meetings, and Special District Association conference. Attend and, when feasible, present at conferences and events at least quarterly.

Specifically target the presentation to the needs and framework of small and rural communities. Several favored buzz-words that came up during interviews that could be used in conjunction with the normal outreach words (i.e. upgrade and modernize facilities, improve the interior environment, replace failing equipment, overcome maintenance problems, reduce the backlog of capital equipment needs, etc.) include "energy security", "energy conservation", and "energy independence".

Identify the most pressing concerns, areas of confusion, and program misconceptions and design CEO-hosted webinars quarterly to discuss these topics and to educate potential EPC participants. Expand on webinar concepts and take the presentation out to the public for a "local roadshow" in a geographically diverse area.

b. **Collaborate with key partner organizations when conducting outreach and education.**
We recommend that the CEO partner with a local resource, such as a DOLA regional representative and/or a regional organization, that can help actively promote EPC or at least inform local communities about EPC.

The CEO would work with these individuals and/or organizations to champion efforts and host local workshops and meetings. Encourage local partner organizations to participate in outreach and education events that are targeted to a specific location. Leverage existing relationships between local partner organizations and communities to build trust between the CEO and communities.

Lastly, we recommend connecting rural communities with mentors from other communities as necessary. Enable an open and honest peer-to-peer mentorship collaboration for peers to interact with each other about EPC implementation. For example, consider Eaton Re-1 School District as a mentor to small and rural school districts located along the Eastern Plains.

BENEFITS

Outreach and education is a relatively cost-effective way to address several program barriers identified by interview participants. In addition, the efforts of a successful outreach and education campaign can have a long-lasting impact, provide an avenue for the CEO to share other CEO-sponsored programs, and create relationships with small and rural communities across the state. Communities that are well educated on EPC will have a better chance for success. The ESCO community will also benefit from increased outreach and education.

CHALLENGES

Although outreach and education materials do not require a significant monetary outlay, they do require significant time investments. While the impacts from an extensive outreach and education are extremely beneficial it can take time to see the results. A successful campaign could take six months to one year before significant impacts are realized.

KEY PARTNERS

The CEO can call on various partners to assist with the outreach effort including ESCOs, financiers, local non-profit organizations, state organizations, and local contractors. For a list of recommended key partners refer to section *Strengthen or Develop Key Partnerships*.

IMPACTS ON THE CEO PROGRAM

- **Costs**: While the monetary outlay of outreach and education materials may be minimal, time commitments will be significant and could increase program costs.
- **Time commitments:** Significant time commitments are expected. A majority of the effort will be exhausted during the development of the outreach and education period and then a more modest, but consistent, effort will be required to sustain the partnerships after the outreach and education campaign has been established. The initial effort may take anywhere from six months to one year.

- **Legal and contracting considerations:** None.
- **Financing considerations:** None.

Strengthen and Develop Key Partnerships

Identified Need

As described in section *Perform Extensive Outreach and Education*, the CEO is encouraged to develop a detailed and extensive outreach and marketing campaign and promote EPC throughout the state to overcome program barriers. Outreach and education will be more successful if the CEO strengthens existing relationships, develops new relationships, and leverages these relationships to promote the EPC program.

In addition to the program barriers identified in subsection *Perform Extensive Outreach and Education,* strengthening or developing key partnerships may also overcome the following barriers:

- Lack of staff resources
- Feeling of isolation from the Front Range
- Difficulty in accessing capital, financing or funding
- Lack of funding support
- Too much paperwork
- Inability to connect with rural audience

Recommended Action Steps

We recommend the following outreach and education action steps.

1. Leverage partnerships to build rapport with communities and to create successful EPC projects.

Organizations across the state engage with small and rural communities on a regular basis. Partner with these organizations to strengthen CEO's presence in small and rural communities and consider enlisting their services to provide EPC support.

a. Partner with key organizations that serve rural communities in geographically diverse areas. Identify key partners that will support CEO's mission and further EPC and leverage these partner resources for outreach and education. Each partnership may bring its own set of benefits or challenges. Some organizations may currently partner with the CEO and may already be familiar with the EPC program (e.g., CDE and DOLA), whereas some organizations may require an introduction to the CEO and to EPC. Likewise, each organization may serve different purposes including; (1) program outreach (2) active program support; and (3) formal EPC regional expeditors (for more information see subsection *Help Create*, *Support and Reimburse Regional Expeditors*).

Table 12 lists potential partner organizations along with each organization's potential role in the partnership. Key partners are shown in **bold**. The key partners are positioned to provide support on energy efficiency projects and/or financing to support EPC and may require less education than

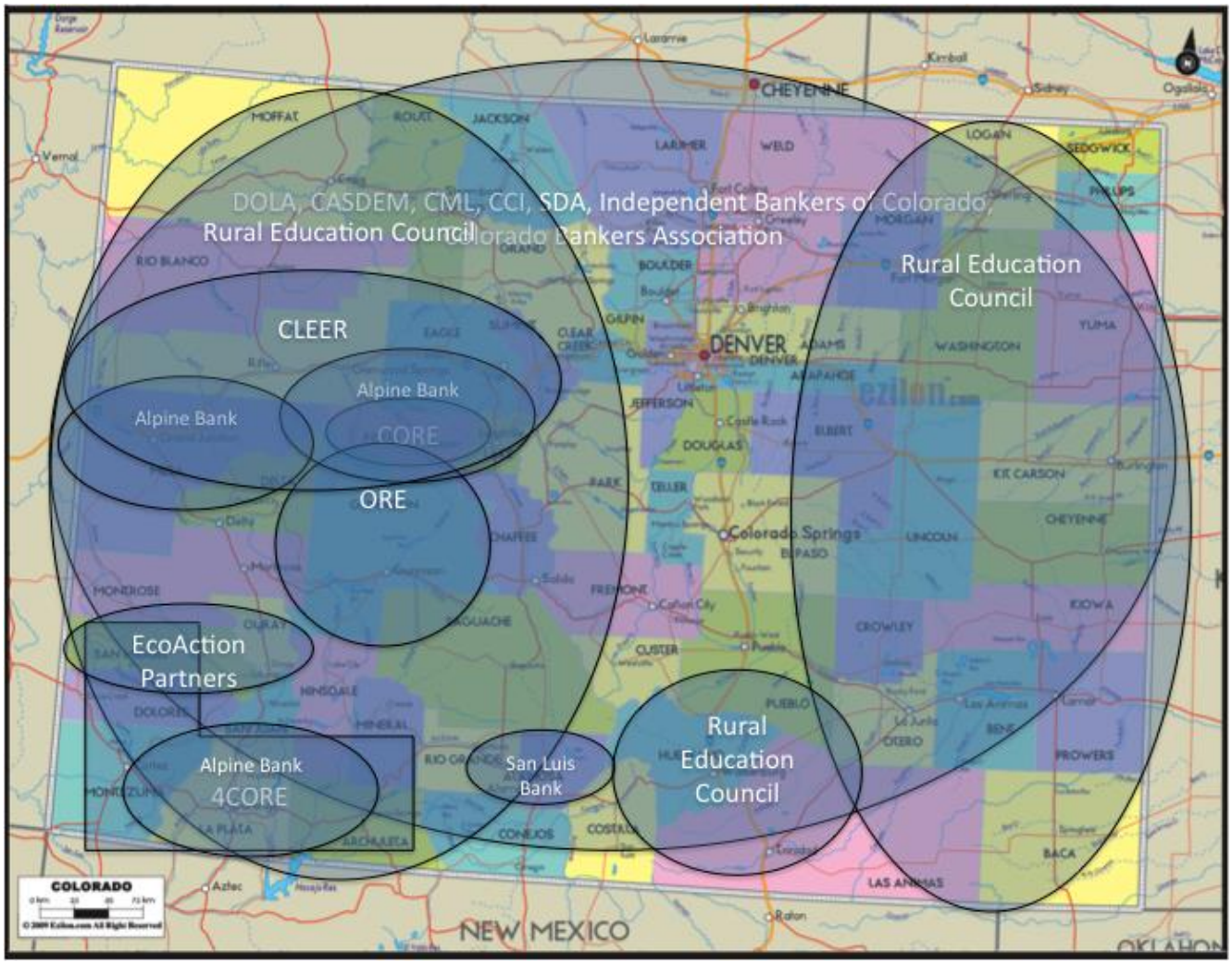
other potential partnering organizations. It is recommended that the CEO pursue relationships with these organizations before pursuing relationships with the other partners.

Table 12. Role of Potential Partner Organizations

Organization	Outreach	Active program support	Formal regional expeditors
Environmental and Energy Organizations			
Clean Energy Economy for the Region (CLEER)	✓	✓	✓
Community Office for Resource Efficiency (CORE)	✓	✓	✓
Four Corners Community Office for Resource Efficiency (4CORE)	✓	✓	✓
EcoAction Partners	✓	✓	✓
Colorado Association of School District Energy Managers (CASDEM)	✓		
Office for Resource Efficiency (ORE)	✓	✓	✓
Council of Governments (COGs)			
Northwest Colorado COG (NWCCOG)	✓		
Southwest Colorado COG (SWCCOG)	✓		
South Central COG (SCCOG)	✓		
Pikes Peak Area COG (PPACOG)	✓		
Southeast COG (SECOG)	✓		
Upper Arkansas Area COG (UAACOG)	✓		
Regional organizations			
Colorado Municipal League (CML)	✓		
Colorado Counties Inc. (CCI)	✓		
Special Districts Association (SDA)	✓		
Colorado Association of School Business Officials (CASBO)	✓		
Colorado Association of School Executives (CASE)	✓		
Northeastern Colorado Managers (NCM)	✓		
Rural Caucus	✓		
State government organizations			
Colorado Department of Health and Environment (CDPHE)	✓		
Colorado Department of Education (CDE)	✓	✓	
Rural Education Council	✓		
Department of Local Affairs (DOLA)	✓	✓	✓
Financial agencies			
San Luis Valley Federal Bank	✓	✓	
Alpine Bank	✓	✓	
Independent Bankers of Colorado Association	✓		
Colorado Bankers Association	✓		
Funding agencies			
CDE (repeat)	✓	✓	✓
DOLA (repeat)	✓	✓	✓
El Pomar Foundation	✓		
Utility companies	✓	✓	
United States Department of Agriculture (USDA)	✓		

Most of the key partners listed in Table 12 represent specific geographic regions of the state, whereas CASDEM, DOLA, CML, CCI, and SDA serve the entire state and the Rural Education Council serves rural school districts. Coverage area by the key partners is shown in Figure 3.

Figure 3. Geographic Dispersion of Potential Key Partners



The Western Slope, particularly the central and southern Western Slope, are well represented by local non-profit organizations. No local non-profit organizations were identified that serve the Eastern Plains or Southern Colorado; however, various COGs and regional organizations may serve these areas. Although, it is likely that these organizations may not be familiar with EPC, the CEO is encouraged to investigate which organizations are interested in forging a relationship.

It should be noted that the list of partners noted above may not be exhaustive and the CEO is encouraged to explore partnerships with other organizations as necessary, especially those that serve the needs of communities along the Eastern Plains.

Benefits

Partnerships will reduce the time investment in outreach and education and will increase the general visibility of the CEO across the state and these relationships can have lasting and beneficial impacts for the CEO. When partners are able to provide active program support and/or act as regional expeditors the chances of successful EPC projects will most likely increase. In addition, ESCO overhead will be reduced since the burden of outreach and education will be shared among the CEO and key partners.

Presumably, the partner organization will benefit by helping their rural communities meet their most pressing needs such as failing equipment and rising operation and maintenance costs. We recommend that regional expeditors are reimbursed for their work (see subsection *Help Create, Support and Reimburse Regional Expeditors*) The CEO will benefit by piggy-backing on established relationships to more easily build trust and program support within the communities. In addition, ESCOs and local financing agencies will benefit by engaging with additional potential participants.

Challenges

Although no monetary outlay is required, significant time investment will be required to do outreach, education, and develop relationships. It is also recommended that the CEO meet with each key partner in person at least once a year, if not more frequently.

Key Partners

Please see above under the subsection *Recommended Action Steps.*

Impacts on the CEO Program

- **Costs**: While the monetary outlay of outreach and education may be minimal, time commitments will be significant and may directly increase program costs.
- **Time commitments:** Significant time commitments are expected. A majority of the effort will be exhausted during the development of the outreach and education period and then a more modest, but consistent effort will be required after the key partnerships have been established. It may take between three and six months to establish meaningful relationships with key partners.
- **Legal and contracting considerations:** None.
- **Financing considerations:** None.

Update the EPC Model

Identified Need

The CEO is encouraged to re-visit the current EPC model and adapt it to better fit the needs of small and rural communities. This effort can help overcome program that include:

- Concern that savings will not be met
- Limited understanding of the process, including the M&V phase
- Contracts are not written for schools
- Lack of staff resources
- Communities have no interest in advanced systems

- Perception that equipment does not need repair or replacement
- Distance/time dissuades ESCO travel

Recommended Action Steps

We recommend the following outreach and education action steps.

1. Demonstrate the potential for energy savings at the project's onset

Using data that support real energy savings, build confidence in participating communities that operating costs will be reduced using EPC.

a. Demonstrate how energy savings will be verified using actual utility bills.

We recommend encouraging M&V Option C, when feasible. Revisit the EPC program education material throughout the project and discuss the role of the guarantee savings and how the community can ensure that their savings will continue to be met. Share success stories that are based on actual cost savings as seen on utility bills rather than achieved savings as documented through an Option A or Option B (or even Option D) effort.

Be sure to highlight and explain when and why savings presented in the M&V report may differ compared to savings seen on utility bills. Encourage ESCOs to have a frank and open discussion about the guarantee and to discuss when and why savings may not be seen on the utility bills. As part of the project, encourage ESCOs to offer complementary services that may enhance the potential to see savings and sustain the savings for years to come such as resource conservation management, installation of utility tracking software, and on-site energy management.

2. Modify existing CEO program template documents

With a few revisions, the EPC documents can better meet the needs of small and rural communities.

a. **Modify the RFP template for small and rural communities.**

Include a requirement in the project RFP for responding ESCOs to list experience with successful and/or attempted small projects at total costs similar to the proposed project. Help ESCOs save on overhead costs by eliminating the requirement for on-site visits during the ESCO selection process. ESCOs may shift these overhead costs to services more useful to the community. While eliminating the mandatory visit requirement might reduce costs, a ESCOs presence demonstrates an interests and commitment to potential clients.

3. Encourage complementary services to the traditional EPC model

Encourage ESCOs to think "out-of-the-box" when it comes to EPC and integrate existing ESCO-related services within a traditional EPC project.

a. **Encourage ESCOs and jurisdictions to explore renewable energy technologies in every project scope.**

Recent EPC projects have demonstrated that renewable energy projects, such as solar photovoltaic projects, have the potential to increase project scope and cover the costs of other,

more capitally intensive measures. Ensure that the ESCOs also explore all related financial incentives and provide adequate equipment training to on-site staff.

b. **Encourage ESCOs to offer additional services that either complement EPC or that build the foundation for future EPC work**.
Encourage ESCOs to explore services such as resource conservation management, continuous commissioning, retro-commissioning, and on-going utility bill tracking and/or energy management which are within the scope of most ESCOs participating in the EPC program and can easily be integrated within existing EPC project scopes. Since many of these services have a relatively short payback period they may be seen as a "quick-win" for the jurisdiction and can help pave the way for future phases of EPC.

It should be noted that based on a recent and thorough review of ESCO M&V practices and results, all of the example services listed above should be implemented in all EPC projects to both ensure that savings can easily be identified (i.e., on-going utility data tracking and/or energy management), that the equipment continues to operate as intended (i.e., continuous commissioning and retro-commissioning), and that savings continue for years to come (i.e., resource conservation management). It should be noted that continuous commissioning by the ESCO can help alleviate a small and rural community energy conservation hurdle which is the lack of locally trained vendors and resources.

c. **Consider offering a roving energy manager that is cost shared between participating communities to help manage the EPC project.**
Identify a qualified local non-profit organization and/or qualified local consultant to perform the services of a roving energy manager. The CEO would help support and educate an energy manager that would be available to answer questions, provide technical support, manage the project, and even provide M&V review for multiple small jurisdictions to reduce staff burden or augment staff capabilities. In some cases, the roving energy manager could even have signatory authority on behalf of the participating jurisdictions. It should be noted that this organization or individual may represent the CEO and the CEO should be very comfortable and supportive of the chosen organization or individual.

During the Energy Services Coalition meeting on June 26th 2015, it was suggested that the CEO consider using the current CEO EPC consultants in this role. This would allow the CEO to not have to train anyone and provide continuity in the support provided to public sector agencies.

Massachusetts has utilized this structure (see Appendix C) as a way to increase the uptake of EPC in rural and small communities.

d. **Conduct a walkthrough of the building(s) once construction is complete.**
Verify the installation of equipment and ensure that it was a high quality project and discuss any potential issues with the ESCO. Be sure that all issues are rectified as early as possible to avoid a loss of savings, interruptions to the building service and to occupant comfort. It should be noted that this is currently a requirement for all K12 school district projects at the request of CDE.

Benefits

A few program modifications were identified that will not only improve the program experience for small and rural communities but may result in an improved program experience for all EPC participants regardless of location or size. The recommended approaches may remove or shift some of the overhead burden from ESCOs and time management requirements of the participating communities. As these recommendations are implemented communities may see increased scope and opportunities for savings. No approach requires any monetary outlay from the CEO and once established, these actions are expected to become better integrated within standard EPC projects and will require less time investment from the CEO.

Challenges

Although no monetary outlay is required, significant time investment will be required to develop guidance around each step and to support its implementation. It may prove difficult to coordinate a roving energy manager and to convince small jurisdictions and ESCOs to pay for these services.

Key Partners

The ESCO community and local environmental and energy non-profit organizations could serve as potential roving energy managers.

Impacts on the CEO Program

- **Costs**: While the monetary outlay of outreach and education may be minimal, there will be time commitments which may directly correlate into program costs.
- **Time commitments:** Moderate time commitments are expected. A majority of the effort will be exhausted during the development and initial implementation of the action steps followed by a more modest, but consistent, effort to ensure that the action steps result in project successes. The initial efforts will take anywhere from 1 to 6 months to initiate and to fully integrate within the EPC program.
- **Legal and contracting considerations:** The CEO will need to create a standard contract to lay out roles and responsibilities with energy managers.
- **Financial considerations:** None.

Provide Financial Support

Identified Need

The CEO is encouraged to provide financial support to help encourage project implementation. This effort can help overcome program barriers including:

- Difficulty in accessing capital and/or financing
- Perception that EPC is too expensive
- Desire to not take on debt
- High IGA costs
- Concern that savings will not be met

- Lack of funding support
- Hesitant to "dip into public trough"
- Shrinking tax base

Recommended Action Steps

We recommend the following action steps.

1. Develop a "Funding and Financing Support" package

Create a "Funding and Financing Support" electronic package that includes a list of local and regional financers, simplified ESCO pricing sheet, and list of potential funding sources and present this to participating communities at the onset of each project.

a. Provide a list of local and regional financiers that will finance small EPC projects.

Identify interested financiers from the existing financier network and through discussions with potential new financiers, including the Independent Bankers of Colorado Association and Colorado Bankers Association. Ensure that relationships with these organizations have been established. It should be noted that extensive EPC outreach and education could be required for new financiers. Encourage financiers to provide a standard EPC financing terms sheet to simplify the financier selection process for those municipalities that do not have financier procurement requirements.

b. Simplify ESCO pricing sheet.

Clarify when ESCO markups are used and when, if ever, these markups are presented to communities. Provide a definition for all pricing terms and ESCO services, i.e., project management, construction management, engineering design, etc.

Present to the ESC coalition and get buy-in from the group. Consider including revisions as part of local government and/or specific K12 school district (if pursued) IGA contracts.

c. Provide a list of potential funding sources.

Develop a list of potential funding sources and include specific contact information. Example funding sources may include DOLA's Energy Mineral and Impact Fund, USDA's Community Facilities grants, CDE's BEST grant, El Pomar Foundation, and various natural gas and electric utility company incentives. Indicate in which situations and/or for which measures the potential funding sources apply. Include examples of previous success stories. Commit ESCOs to helping communities identify and apply for supplemental funding before IGA contract or EPC is signed.

Benefits

Simple financing and funding guidance documents can result in significant benefit to the both small and rural communities and to the ESCOs. These guidance documents can help improve the viability of a project and can help forge relationships between the communities and the ESCOs, both of which will help ensure project success. Fortunately, the CEO will not have to re-invent the wheel but will need to research existing information and compile it into an overall guidance document.

Challenges

Although no monetary outlay is required for the creation of the "funding and financing support" package, significant time investment will be required to develop it.

Key Partners

Local and regional financiers, regional financing organizations (such as the Independent Bankers of Colorado Association and Colorado Bankers Association), potential funding organizations, ESCOs, and DOLA.

Impacts on the CEO Program

- **Costs**: No monetary outlays are expected with the financing guidance document package; however, time commitments translate directly into cost.
- **Time commitments:** Moderate time commitments are expected to draft the initial guidance documents. As new information becomes available it is expected that the guidance documents can be easily amended. It is expected that guidance documents can be created in approximately three months but the dissemination of information will be on-going.
- **Legal and contracting considerations:** None.
- **Financial considerations:** None.

Establish Local Support

Identified Need

The CEO is encouraged to approach these projects from the mindset of rural communities and, whenever feasible, increase its presence in small and rural communities. This effort can help overcome program barriers including:

- No long-term maintenance support
- Lack of staff resources
- Mistrust state government
- Distance/time dissuades ESCO travel
- Feeling of isolation from the Front Range
- Changes in political climate of various decision-making bodies
- Inability to connect with rural audiences

Recommended Action Steps

We recommend the following action steps.

1. Establish a local presence

Create a network of support that includes the CEO, the ESCOs, and other organizations to ensure that communities are well cared for during and after project development and implementation.

a. **Create a network of support for each small and rural community.**
Establish a local presence for the CEO. CEO's local presence may be best represented by a local organization or local individual. Consider that this organization or individual will represent the CEO and must be trained and equipped to understand the mission of the CEO, how the CEO functions, and basic CEO approaches to projects. The local presence must be willing to obtain an expert understanding of EPC and the intricacies of EPC, particularity from the view of the community. Set them up to pass-on knowledge to communities when necessary and in tandem with the CEO's efforts.

Encourage ESCOs to have a local presence. Although many ESCOs cite a regional office located along the Front Range, some of these offices are served by only one to half a dozen people and these individuals are supported by other branches. A similar approach may be feasible at local office(s) across the state.

The CEO can help establish a local network of support including: non-profit organizations, local financing agency, and perhaps even local contractors. Train local resources to support EPC projects in the communities in which they serve. Reach out to support that may exist long after the EPC project is complete to ensure that the communities receive long-term care.

BENEFITS

By establishing various local EPC hubs across the state, the CEO will ensure that communities are adequately supported now and for years to come. It will also create a long-term connection between the CEO and small and rural communities, which will also expedite outreach and marketing for the CEO's other programs.

CHALLENGES

Although no monetary outlay is required significant time will be required to establish relationships with and to train various organizations in a local EPC network. ESCOs may be resistant to establishing local field offices.

KEY PARTNERS

ESCOs, local non-profit organization, financiers, and contractors specific to local hubs determined by the CEO.

IMPACTS ON THE CEO PROGRAM

- **Costs**: No monetary outlays are expected with creating a local network; however, time commitments will be significant and time may directly correlate into program costs.
- **Time commitments:** Significant time commitments are expected to develop and train the initial resources. As time goes on it is expected that training will be reduced and the local network will become self-sufficient. It is expected that establishing a local presence could take between six months and one year.
- **Legal and contracting considerations:** None.
- **Financial considerations:** None.

Train Local Resources

Identified Need

The CEO is encouraged to incorporate local contracting resources to help ensure that communities continue to see savings for years to come. This effort can help overcome program barriers including:

- No long-term maintenance support
- Lack of staff resources
- Concern that savings will not be met

Recommended Action Steps

We recommend the following action steps.

1. Strengthen local maintenance and operation expertise

Create a network of contractors that are locally available to support communities once the EPC project is complete.

a. **Train local contractors to deliver high quality EPC project support, particularly long-term maintenance support.**
Design training so that local contractors are competent in energy efficiency. Host workshops to educate local contractors on EPC and specific EPC topics, such as long-term maintenance support needs, efficient lighting replacements, etc. Note that the CEO may have to rely on outside consultants to complete the training program. Partner with DOLA, the Colorado Workforce Development, Veterans for Green Jobs, Energy Efficiency Business Coalition or other job support programs to create a training program that educates local contractors on energy efficiency building upgrades to support EPC projects and to provide long-term maintenance. Encourage ESCOs to pursue work with local contractors that complete a CEO-sponsored training.

b. **Encourage ESCOs to increase intensity of training for in-house staff, especially with regard to building controls and long-term maintenance**.
Partner with the ESC to develop guidelines on minimum training requirements for particular sets of measures and require certain training documentation.

Benefits

Improper operation of equipment is a key factor of why communities lose out on potential savings. A lack of training and long-term maintenance support lead to improper operation. Designing solutions that will improve the ability to correctly operate equipment has the potential to significantly improve the M&V experience for many communities.

Challenges

Although no monetary outlay is required (if the training is done by CEO employees) significant time will be required to establish a program and/or workshops to train contractors.

KEY PARTNERS

At a minimum, key partners may include Energy Efficiency Business Coalition, ESCOs, Colorado Workforce Development, and Veterans for Green Jobs.

IMPACTS ON THE CEO PROGRAM

- **Costs**: No monetary outlays are expected with creating a contractor training program (unless the CEO hires a firm to do the training) and/or workshops; however, time commitments will be significant and time may directly correlate into program costs.
- **Time commitments:** Significant time commitments are expected to develop and train local contractors. As time goes on it is possible that these programs and/or workshops could be led by another entity. It is expected that adequate training could take between six months and one year.
- **Legal and contracting considerations:** None.
- **Financial considerations:** None.

TARGET NEW PUBLIC JURISDICTION SECTORS

IDENTIFIED NEED

Several public jurisdiction sector types have not been regularly engaged in the EPC process, including wastewater treatment plants (WWTP), water treatment plants (WTP), public hospitals and public housing. While it is assumed that energy savings opportunity exists with each sector type, the degree with which this opportunity exists and the percent and cost-effectiveness of this opportunity to total operating costs is not definitively known. Few ESCOs have explored EPC projects with these sectors and there is room to continue to explore the savings potential and appropriate EPC approaches.

RECOMMENDED ACTION STEPS

We recommend the following action steps to target new public jurisdiction sectors.

1. Complete a market analysis on the various sectors

This CEO would complete a market analysis on each sector that would include an overview of the market opportunity, a benefits and barriers overview, identify potential partners or contacts for the CEO to target, outline several marketing outlets, and provide several specific funding and financing resources. They would also want to interview several public jurisdictions from each sector. With this information at hand the CEO would decide if it made sense to move forward with a program to address these markets. If it does make sense then they would want to create programmatic documents and heavy outreach.

BENEFITS

Targeting new sectors expands the scope of EPC and brings new opportunity to the ESCOs. It applies a well-tested model to help new sectors save on energy cost, furthering the mission of the CEO.

CHALLENGES

It will require time to understand the needs and mechanisms of new sectors. New partnerships will need to be established, contracts may need to be amended, and a slightly different approach to EPC may be required.

KEY PARTNERS

To better understand potential program hurdles the CEO is encouraged to partner with WWTP and WTP supporting organizations such as the CDPHE, Rocky Mountain Water Environment Association (RMWEA) and the Rocky Mountain Section of the American Water Works Association (RMSAWWA). Potential partners in the hospital sector include the Colorado Hospital Association (CHA) and the Colorado Association of Healthcare Engineers and Directors (CAHED). The lead organization for public housing in Colorado is the State Chapter of the National Association of Housing and Redevelopment Officials (NAHRO).

IMPACTS ON THE CEO PROGRAM

- **Costs**: No monetary outlays are expected; however, time commitments will be significant and time may directly correlate into program costs.
- **Time commitments:** Significant time commitments are expected to successfully break into a new market. As time goes on it is possible that the programs will take off and the CEO's involvement will be no less or no greater than with other public sectors. It is expected that new projects in these sectors may not begin for up to six months to one year.
- **Legal and contracting considerations:** Contracts may need to be amended to represent the new sectors.
- **Financial considerations:** None.

PROGRAM RECOMMENDATIONS FOR ESCOS

While a majority of the recommendations focus on what the CEO can do to improve the EPC model for small and rural communities, the ESCOs can take an active role to improve project experience as well. Recent discussions with small and rural EPC participants indicate that ESCOs should tailor their approach and presentation to focus specifically on small and rural community needs. As part of their EPC approach, ESCOs, at a minimum, should consider the following:

- Be willing to apply for and secure funding on behalf of the community. And be creative in exploring potential funding sources.
- Provide clarity around the pricing model and explain the Cost Estimate Tool as needed.
- Tailor EPC presentations, specifically project proposals, to small and rural communities. For instance, do not reference projects conducted along the Front Range when presenting to small communities along the Western Slope or the Eastern Plains.
- Partner with local non-profit organizations.
- Articulate the ESCO's role as a long-term partner and reassure the community that the ESCO will not abandon it after the EPC project is complete.
- Demonstrate previous experience with similar sized projects and in similar locations.

TOOLS AND STRATEGIES FOR POOLING PROJECTS

We believe that pooled projects are a very viable option for increasing EPC in rural and small communities. The CEO program has already had several successfully pooled projects throughout Colorado (see Appendix C for a full list and details on the projects). In addition, several other states (especially Massachusetts) have had success pooling projects in order to support small and rural communities.

HELP CREATE, SUPPORT AND REIMBURSE REGIONAL EXPEDITORS

IDENTIFIED NEED

Many of the ESCOs that had completed or attempted to complete a pooled project, as well as several communities that we interviewed recommended that a "regional expeditor" be part of pooled projects. A regional expeditor is a local champion that would be responsible for bringing various public jurisdictions together into a cohesive pool and keeping them motivated throughout the entire process. Non-profit organizations, DOLA's regional representatives and COGs might be able to fulfill the "regional expeditor" role. It is expected that they would act in tandem with the CEO consultants.

The very successful pooling program in Massachusetts hires regional expeditors to recruit and coordinate member communities, publish and file solicitations, and gather representatives from participating parties into an evaluation team. In return, the regional expeditors collect a fee from participants for the services which helps motivate their involvement. The fee is not based on a percentage of the project, as that is considered a conflict of interest, therefore the fee is based on services provided to the governments.

RECOMMENDED ACTION STEPS

At a minimum, we recommend the following if the CEO decides to help create, support, and reimburse regional expeditors.

1. Develop Preliminary Program Design

Develop a preliminary program design for pooling projects with the support of regional expeditors. This analysis would include reaching out to various potential regional expeditors to understand their interest level, what support they would need from the CEO, and the expected reimbursement level. In addition the CEO would have to estimate how much of their time would be needed to train regional expeditors. After these conversations have been completed, the CEO would create a business/program plan that outlines a budget, rationale, long-term schedule, and projected outcomes.

2. Create instructional guidelines on how to successfully pool projects

If the CEO has funding and approval to move forward, create guidelines on how to successfully pool projects. Guidelines would be created for regional expeditors that would outline their role and responsibilities, as well as provide steps on how to successfully pool projects. In addition, the CEO might create guidelines specifically for interested public jurisdictions that explain the EPC process including the additional steps an entity must take to work on a pooled project.

3. Create instructional guidelines on how to successfully pool projects

In order to get potential regional expeditors interested, the CEO might want to complete a few webinars or host a statewide all-day workshop for potential regional expeditors.

BENEFITS

A regional expeditor can greatly increase the chance of a pooled project to move forward because they act as a local champion. Through our conversations with rural and small communities and other state programs, a consistent local presence is critical to build trust and open doors. Several ESCOs that were interviewed identified the great risk for an ESCO to support a pooled project due to the higher upfront costs of organizing multiple parties. A regional expeditor would help organize, reducing the risk to ESCOs. Once an RFP moves forward the regional expeditor would continue to support the public jurisdictions.

Regional expeditors would also conduct outreach on behalf of the CEO and help bridge any gaps that may exist between public jurisdictions and the ESCOs by remaining vendor neutral. Since regional expeditors would be reimbursed for their services there is a higher likelihood that non-profit organizations and government agencies would be interested in helping market EPC to smaller government agencies.

CHALLENGES

There are several challenges with helping create, support, and reimburse regional expeditors. It will take considerable time for the CEO to find and train regional expeditors. In addition, the CEO must have a dedicated source of money to reimburse a regional expeditor, as well as a standard contract to lay out roles and responsibilities. It should be noted that even with the support of a regional expeditor, the CEO would need to continue providing performance contracting technical expertise to support each entity in the pooled project.

KEY PARTNERS

Several potential regional expeditors are non-profit organizations that have energy efficiency as part of their mission, DOLA regional reps, or COGs throughout Colorado.

IMPACTS ON THE CEO PROGRAM

- **Costs**: The CEO would need to commit time to finding and training regional expeditors as well as proving long-term performance contracting expertise to expeditors and pooled entities. In addition, the CEO would need to reimburse regional expeditors for their services.
- **Time commitments:** Significant time commitments are expected to set up the program.
- **Legal and contracting considerations:** The CEO will need to create a standard contract to lay out roles and responsibilities with regional expeditors.

SHARED PROFESSIONAL SERVICES PROGRAM

IDENTIFIED NEED

There are several examples from other states of how a Shared Professional Services Program has successfully supported small and rural communities that do not have internal resources to support an energy manager, project manager, or M&V specialist. The CEO could provide grants and/or training to an

individual who would support multiple rural and small communities with their energy management or project management needs.

Recommended Action Steps

We recommend the following if the CEO decides to create a shared professional services program.

1. Develop Preliminary Program Design

Develop a preliminary program design for a shared professional services program. This analysis would include reaching out to various states that have supported shared professional programs to better understand how they structured their programs and costs. In addition, the CEO would reach out to various non-profit organizations and government agencies to see if they could provide the energy management and project management expertise. The CEO would also need to do an analysis of in-house expertise to ensure that they are able to train individuals on the various subject matters. Once these conversations have been completed, the CEO would create a business/program plan that outlines a budget, rationale, long-term schedule, and projected outcomes.

2. Market the program

In order to ensure that the energy manager or project manager services were being utilized, the CEO would want to contact local public jurisdictions to offer the professional services.

Benefits

One of the hurdles mentioned during interviews for pursuing energy efficiency for rural and small communities was a lack of bandwidth and expertise. The shared professional would help alleviate some of these issues by providing local, long-term support. The local representative could also do outreach for other CEO programs. An M&V specialist, in particular, would increase confidence in project performance and help support CEO's goals to achieve successful projects.

Challenges

This program would be costly for the CEO. In addition, the CEO might have to spend considerable time training and/or managing one or more energy manager(s) or project manager(s). It might be hard to find local expertise in many of these communities forcing the CEO to hire outside the immediate community which would increase costs and perhaps lessen the effectiveness of the program.

Key Partners

The CEO would rely on non-profit organizations and various government agencies to help hire and spread the word about the program.

Impacts on the CEO Program

- **Costs**: The CEO would need to commit substantial time to finding and training an energy manager, project manager or M&V specialist. In addition, the CEO would need to have substantial and long term funding to pay for services.
- **Time commitments:** Significant time commitments are expected to set up the program.
- **Legal and contracting considerations:** None.

APPENDIX A: ASSESSMENT OF MARKET POTENTIAL

The following provides an overview of the number of public jurisdictions in Colorado and the number of EPC projects that have already been completed in rural and metro areas. Merrill Group is unable to analyze the potential for EPCs in each of these public jurisdictions because building stock and utility spend are not known. However, it is clear from the research, interviews, and market penetration numbers that there is the potential for the CEO EPC program to increase their presence in rural and small communities.

OVERVIEW OF PUBLIC JURISDICTIONS IN COLORADO

As shown in Table 13, there are 3,614 public jurisdictions in Colorado. The majority of the jurisdictions are special districts (3,047). Colorado law limits the types of services that county governments can provide to residents, therefore special districts are created to fill the gaps that may exist in the services counties provide and the services the residents may desire. Common examples of special districts include ambulance, fire protection, health assurance, health service, park and recreation, cemetery, sanitation, and water. The majority of special districts would not be good fit for an EPC due to lack of building stock. For example, there are 81 cemetery districts throughout Colorado.

Table 13 highlights a few special district types that might prove a good fit for an EPC due to potentially larger building stock and energy intensity (i.e. hospitals and water districts are particularly energy intensive per square foot). The special districts categorized as "other" are less likely to be a good fit for EPC. Table 13 also highlights additional government types such as county government and higher education institutions. Depending on building stock and utility spend these entities may or may not be a good fit for an EPC.

Table 13. Public Jurisdiction Types in Colorado

Government Type	Number of Entities
Counties	64
Higher Ed	29
State Government Agencies	20
School Districts	184
City or Town	270
Special Districts (total)	3,047
County, Municipal, and Multijurisdictional Housing Authorities	*114*
County Recreation Districts/Park and Recreation Districts	*62*
County Hospital Authorities/Health Districts	*39*
Library Districts	*55*
Water Authorities/Water and Sanitation Districts/Water Districts	*231*
Other	*2,546*
Total	**3,614**

Using the Census's Rural-Urban Continuum codes laid out earlier in the Definitions subsection, the number of public jurisdictions that fall within metro, rural, or neither counties are highlighted below. Public jurisdictions that fall under multiple counties are classified as multiple. As expected, rural counties have less public jurisdictions compared to counties classified as metro or neither.

Table 14. Type of Public Jurisdictions by County Classification

	City/Town	County	Higher Ed	K12 School	Special District	State Gov't Agency	Grand Total
Metro	89	17	13	69	2,156		2,344
Neither	106	27	7	73	525		738
Rural	53	20		42	157		272
Multiple	22		9		209	20	260
Grand Total	**270**	**64**	**29**	**184**	**3,047**	**20**	**3,614**

The following table splits out the type and number of public jurisdictions by County.

Table 15. Type and Number of Public Jurisdictions by County

County	County Classification	City/ Town	County	Higher Ed	K12 School	Special District	State Gov't Agency	Total
Adams	Metro	2	1		7	279		289
Alamosa	Neither	2	1	1	2	4		10
Arapahoe	Metro	9	1		7	316		333
Archuleta	Neither	1	1		1	12		15
Baca	Rural	6	1		5	15		27
Bent	Neither	1	1		2	5		9
Boulder	Metro	8	1	1	2	80		92
Broomfield	Metro	1	1			52		54
Chaffee	Neither	3	1		2	4		10
Cheyenne	Rural	2	1		2	13		18
Clear Creek	Metro	4	1		1	10		16
Conejos	Rural	5	1		3	12		21
Costilla	Rural	2	1		2	9		14
Crowley	Rural	4	1		1			6
Custer	Rural	2	1		1	2		6
Delta	Neither	5	1		1	23		30
Denver	Metro	2	1	4	4	101		112
Dolores	Rural	2	1		1	6		10
Douglas	Metro	5	1		1	231		238
Eagle	Neither	6	1		1	71		79
El Paso	Metro	7	1	2	15	242		267
Elbert	Metro	3	1		5	36		45
Fremont	Neither	6	1		3	18		28

County	County Classification	City/ Town	County	Higher Ed	K12 School	Special District	State Gov't Agency	Total
Garfield	Neither	6	1		3	38		48
Gilpin	Metro	1	1		1	8		11
Grand	Neither	6	1		2	57		66
Gunnison	Neither	4	1	1	1	21		28
Hinsdale	Rural		1		1	5		7
Huerfano	Neither	1	1		2	14		18
Jackson	Rural	1	1		1	2		5
Jefferson	Metro	7	1	1	1	203		213
Kiowa	Rural	3	1		2	10		16
Kit Carson	Neither	6	1		5	13		25
La Plata	Neither	3	1	1	4	43		52
Lake	Neither	1	1		2	11		15
Larimer	Metro	5	1	1	3	193		203
Las Animas	Neither	6	1		6	13		26
Lincoln	Rural	4	1		3	7		15
Logan	Neither	6	1	1	4	10		22
Mesa	Metro	5	1	1	3	49		59
Mineral	Rural		1		1	3		5
Moffat	Neither	2	1		1	6		10
Montezuma	Neither	3	1		3	24		31
Montrose	Neither	4	1		2	15		22
Morgan	Neither	5	1	1	4	11		22
Otero	Neither	6	1	1	6	7		21
Ouray	Rural	2	1		2	11		16
Park	Metro	2	1		2	28		33
Phillips	Rural	3	1		2	4		10
Pitkin	Neither	3	1		1	23		28
Prowers	Neither	4	1	1	4	9		19
Pueblo	Metro	3	1	2	2	23		31
Rio Blanco	Rural	2	1		2	19		24
Rio Grande	Neither	3	1		3	9		16
Routt	Neither	4	1		3	26		34
Saguache	Rural	4	1		3	6		14
San Juan	Rural	1	1		1			3
San Miguel	Rural	5	1		2	13		21
Sedgwick	Rural	3	1		2	11		17
Summit	Neither	6	1		1	25		33
Teller	Metro	3	1		2	19		25
Washington	Rural	2	1		5	9		17
Weld	Metro	22	1	1	13	286		323
Yuma	Neither	3	1		4	13		21
Multiple	N/A	22		9		209	20	260
Total		**270**	**64**	**29**	**184**	**3,047**	**20**	**3,614**

APPENDIX B: AN OVERVIEW OF PAST CEO EPC PROJECTS

All data in this section regarding which public jurisdiction completed projects and their resulting investment was provided by the CEO and analyzed by Merrill Group. CEO provided only total investment per public jurisdiction. They did not split out the numbers by the amount of unique projects each public jurisdiction completed. For example, the Department of Corrections has completed almost $30 million in EPC improvements by completing multiple projects on various facilities and multiphase projects on several facilities. Therefore, many of the projects that are cited in Table 6 could actually be multiphase projects or multiple projects on the same public jurisdiction.

SUMMARY

The CEO has supported 141 Colorado public jurisdictions with their EPC projects for over $447 million in investments. Many of these public jurisdictions have completed more than one project. Using the Census's 2013 Rural-Urban Continuum codes for classifying counties as metro, neither, or rural, Table 5 shows that the CEO has supported 11 entities in rural counties for a total of approximately $10 million dollars in energy efficiency upgrades.

Table 16. Number of Entities that have completed an EPC through CEO

	# of Entities that have done an EPC	% of Total Entities	Total EPC investments	% of Total EPC Investment
Metro	48	34%	$ 197,571,372	44%
Neither	62	44%	$ 105,934,293	24%
Rural	11	8%	$ 10,089,495	2%
Multiple	20	14%	$ 133,782,391	30%
Total	**141**	**100%**	**$ 447,377,551**	**100%**

All of the rural projects were completed between 1997 and 2014. Two projects were completed prior to 2008 while the remaining nine projects were completed after 2008 with the most recent project being the Town of Limon in 2014.

Table 17. Public Jurisdictions Total Project Investment

Total Investment by Public Jurisdiction	# of Entities	% of projects	Total Investment	% of projects
Total Investment Over $10 million	9	6%	$ 160,818,052	36%
Total Investment between $5 and $10 Million	12	9%	$ 89,130,774	20%
Total Investment between $1 and $5 Million	71	50%	$ 169,737,632	38%
Total Investment between $500k and $1 Million	31	22%	$ 21,946,074	5%
Total Investment below $500k	18	13%	$ 5,745,019	1%
Grand Total	141	100%	$ 447,377,551	100%

Forty-nine of the public jurisdictions out of the 141 completed projects under $1 million. However, these projects only accounted for 6% of the total EPC investment done in the State.

Market Penetration by Sector

Table 18 highlights the market penetration of EPC's by most common market segment for the entire United States in 2013, while Table 19 analyzes the market penetration by market segments for Colorado.

Table 18. Market Penetration Rates for EPC throughout US[8]

Market Segment	U.S. Census Region				
	Northeast	Midwest	South	West	U.S.
K-12 Schools	45%	40%	42%	30%	42%
State / Local	39%	30%	30%	45%	30%
Federal	27%	28%	25%	27%	28%
Universities/Colleges	25%	25%	23%	30%	25%
Public Housing	20%	15%	18%	18%	18%
Health/Hospitals	10%	10%	15%	15%	10%
Private Commercial	10%	6%	8%	9%	9%

Table 19. Market Penetration Rates for EPC throughout Colorado

	Number of Entities that have done an EPC	Number of Public Jurisdictions in Colorado	Market Penetration
City/Town	29	270	11%
County	22	64	34%
Higher Ed	18	29	62%
K-12 School	57	184	31%
State Government Agency	7	20	35%
Special District	8	3,047	0.26%
County, Municipal, and Multijurisdictional Housing Authorities	0	*114*	0%
County Recreation Districts/Park and Recreation Districts	4	*62*	6%
County Hospital Authorities/Health Districts	0	*39*	0%
Library Districts	3	*55*	5%
Water Authorities/Water and Sanitation Districts/Water Districts	1	*231*	0.43%
Other	0	*2,546*	0%
Total	**141**	**3,614**	**4%**

Colorado lags in market penetration compared to the national average for public housing and health/hospitals. In fact according to the data provided by the CEO, the program has not completed any projects in either market segments.[9] Many small and rural communities have health/hospital facilities and

[8] *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry* (2013) by Stuart, E., Larsen, P., Goldman, C., and Gilligan, D. http://emp.lbl.gov/publications/current-size-and-remaining-market-potential-us-energy-service-company-industry

[9] According to Linda Smith, CEO EPC Program Manager from 1989-2007, the Energy Office did a hospital project in Walsh with an ESCO in the 90s and in the 2000s they targeted housing authorities (county-owned facilities) but did not succeed in developing a project.

public housing. As such, this might be a potential sector for the CEO to focus on when attempting to expand the program into rural and small communities. Health and hospital facilities are an especially promising market due to their generally high energy usage per square foot. In addition, water and wastewater facilities provide another promising market due to their high energy usage and their ability to access various funding sources.

CITIES AND TOWNS

The following is an overview of the number of cities and towns considered rural or urban.[10] More than 60% of all Colorado's cities and towns are considered rural; however together all rural cities and towns make up only 4% of the State's population.

Table 20. Number of Cities and Town by Rural and Urban Definitions

	# of cities and towns	% of Cities and Towns considered rural or urban	Sum of Population	% of Population
Rural	172	64%	129,895	4%
Urban	98	36%	3,550,652	96%
Grand Total	**270**	**100%**	**3,680,547**	**100%**

The CEO EPC program has worked with 29 cities and towns, which has resulted in over $62.5 million in improvements. Projects have ranged in size from $217,000 for the Town of Fowler (population 1,182) to $14.8 million for the City of Boulder (population 97,385), which had a multi phased project. Cities and Towns are an especially promising target for the CEO to focus on for completing smaller projects because success has already happened. For example, of the 29 cities and towns that have completed projects, 7 of them have had projects under $500,000 and 14 of the 27 cities and towns supported have a population under 10,000. Of those 14 cities and towns 6 had populations under 5,000 (the smallest population being Town of Central with a population of 663).

Table 21. Number of Cities and Town that have completed EPC Projects

	Total Number of Cities and Towns	Number of Cities and Towns that have done an EPC	Total EPC investments
Rural	172	4	$ 7,375,695
Urban	98	25	$ 55,152,117
Grand Total	**270**	**29**	**$ 62,527,812**

[10] Uses the rural and urban definitions laid out in the 2010 Census

COUNTIES

Table 22 is an overview of the number of counties considered metro, neither or rural.[11] Twenty-seven percent of all counties are considered metro, however these 17 counties represent 86% of the population. Rural counties account for 31% of the total counties but account for just 2% of the total population.

Table 22. Number of Counties

	# of Counties	% of Counties	Sum of Population	% of Population
Metro	17	27%	4,341,903	86%
Neither	27	42%	611,030	12%
Rural	20	31%	76,263	2%
Grand Total	**64**	**100%**	**5,029,196**	**100%**

The CEO EPC program has worked with 22 counties, which has led to over $48.5 million in improvements. Projects have ranged in size from $187,000 for Ouray County to over $10 million in improvements for Arapahoe County (population 572,003). Of the 22 counties that have completed projects, 10 of them have populations under 20,000 (the smallest being the Ouray County with a population of 4,436).

Table 23. Number of Counties that have completed EPC Projects

	Total Number of Counties	Number of Counties that have done an EPC	Total EPC investments
Metro	17	7	$ 33,641,706.00
Neither	27	13	$ 14,298,703.00
Rural	20	2	$ 726,059.00
Grand Total	**64**	**22**	**$ 48,666,468.00**

SCHOOL DISTRICTS

Table 24 is an overview of the number of school districts in Colorado (includes active BOCES). The definitions for small, rural small, and urban are defined above in the Definitions subsection and consistent with the Colorado Department of Education (CDE) definitions. More than 50% of all Colorado's school districts are considered small rural and almost 25% are considered rural. Together schools categorized as small rural and rural make up 32% of the number of schools but only 16% of the student population.

Table 24. Distribution of K12 Schools by Rural, Small Rural, and Urban Definitions

	Number of School Districts	% of School Districts	Number of Schools	% of Schools	Number of Students	% of Students
Rural	44	24%	293	16%	104,342	12%
Small Rural	109	59%	291	16%	36,578	4%
Urban	31	17%	1,221	68%	713,126	83%
Total	**184**	**100%**	**1,805**	**100%**	**854,046**	**100%**

[11] Uses the metro, rural, and neither definitions laid out in the Census's 2013 Rural-Urban Continuum codes

As shown in Table 25, the CEO EPC program has worked with 57 school districts, which has led to over $157 million in improvements. A Statewide Facility Assessment[12] for all K12 schools determined that as of 2010 there was currently over $13.9 billion in need of infrastructure upgrades to address health and safety issues, education technology requirements, site requirements, energy performance requirements, functionality or suitability issues, capacity requirements, accessibility issues, and historic significance considerations. By 2018, the amount of need is forecasted to increase to over $17.8 billion. The CDE was approved by the 2015 Legislature to update the Statewide Facility Assessment and expects the estimates for infrastructure upgrades to grow substantially. While the infrastructure needs continue to grow many of the funding sources to support these upgrades remain constant or are shrinking. As such, EPC provides a very important tool for school districts.

Table 25. Number of K12 Schools that have completed EPC Projects

	Total Number of K12 Schools	Number of K12 Schools that have done an EPC	Total EPC investments
Rural	44	20	$ 51,535,131
Small Rural	109	25	$ 24,009,751
Urban	31	12	$ 82,348,258
Grand Total	**184**	**57**	**$ 157,893,140**

Special Districts

Table 26 provides an overview of the number of special districts in Colorado. As shown, very few special districts have participated in an EPC (four recreation districts, three library districts, and one sanitary district) and none of these entities were in a rural community. Many special districts are not a good fit for an EPC due to low or nonexistent building stock; however as discussed above hospitals, public housing, and wastewater districts might be a good market for the CEO to look at as a way to support small and rural communities.

Table 26. Number of Special Districts that have completed EPC Projects

	Total Number of Special Districts	Number of Special Districts that have done an EPC	Total EPC investments
Metro	2,156	4	$ 5,300,113
Neither	525	2	$ 782,832
Rural	157	0	$ -
Multiple	209	2	$ 1,978,982
Grand Total	**3,047**	**8**	**$ 8,061,927**

[12] More information, including school specific data, can be found at http://www.cde.state.co.us/cdefinance/CapConstAssessment

State Agencies

Many state agencies buildings are dispersed throughout the state and therefore were not categorized as rural, metro, or neither. However, as a whole the majority of state agency buildings can be found in the Front Range. The CEO EPC program has worked with seven state agencies, which has led to over $102 million in improvements. Some of the agencies are located in less populated counties or cities such as the Colorado Department of Transportation which has buildings in every county and therefore provides a potential inroad with working with smaller and more rural communities. Many state projects are located in a lead county and therefore can assert a local economic impact.

Table 27. Number of State Agencies that have completed EPC Projects

	Total Number of Entities	Number of Entities that have done an EPC	Total EPC investments
State Agencies	20	7	$ 102,525,080

Higher Education

The majority of Higher Education Institutions can be found in metro areas. Nine of the institutions are located in multiple counties; and therefore, are categorized as multiple. The CEO EPC program has worked with 18 higher education institutions, which has led to over $67 million in improvements. Some of the institutions are located in less populated counties such as the Colorado Mountain College which has 11 locations throughout Colorado and therefore provide a potential inroad with working with smaller and more rural communities.

Table 28 Number of Higher Ed Institutions that have completed EPC Projects

	Total Number of Higher Ed Institutions	Number of that have done an EPC	Total EPC investments
Metro	13	7	$ 26,311,021
Neither	7	5	$ 25,241,359
Multiple	9	6	$ 16,150,744
Grand Total	**29**	**18**	**$ 67,703,124**

APPENDIX C: SUMMARY OF PAST AND CURRENT AGGREGATING, POOLING, AND BUNDLING PROJECT ACTIVITIES

SUMMARY OF RESEARCH

Merrill Group conducted extensive research and over 35 interviews with a variety of individuals whose organizations have direct experience working with small and rural communities and/or have direct experience working with legislation and financing that supports small and rural communities. A thorough literature review showed that very little information on strategies to accelerate the uptake of EPC in small and rural communities is publicly available and even less information is available on how to successfully aggregate, pool, or bundle projects. From the obtained research it is clear that that this market sector has been a challenge in the US, as well as other countries over the past three decades. Yet some successful strategies have been demonstrated

Each interview participant was asked about their experience or knowledge of projects that were aggregated, pooled or bundled. The majority of individuals did not have any personal experience with a project that was aggregated or pooled but were able to provide feedback on the potential barriers (i.e. legal, financial, and programmatic), benefits, and solutions for completing one. The participants that had heard of one or had participated in a project that was aggregated or pooled in Colorado provided lessons learned (see Table 29).

Appendix G goes into great detail regarding the process used by Merrill Group to collect data including a list of interview participants and a thorough analysis of their feedback. A literature review can be found in Appendix I.

Table 29. Summary of Colorado Projects that Attempted to Aggregate and Pool Multiple Jurisdictions

Community Description	Type	Completed Project?	Major Barrier(s) Identified by Interview Participant
City of Wray and Yuma County	Aggregate	No	Not identified.
Chaffee County and City of Salida	Aggregate (assumed)	Yes	Not identified.
GNECI: Eight Roaring Fork Valley communities	Pooled	Only 3 of the 8	Most participants dropped out. Difficult to get everyone on same page. Tremendous amount of effort. Complex contracts. No economies of scale.
Town of Meeker and Rio Blanco County	Pooled	Only 1 of the 2	Town did not want to finance and preferred to self-implement.
City of Central City, Gilpin County, Town of Black Hawk	Pooled	Only 2 of the 3	Not identified.

Community Description	Type	Completed Project?	Major Barrier(s) Identified by Interview Participant
Pitkin County, airport, and library district	Pooled	No	Limited savings. Not a viable project. Lots of time and effort with separate meetings with each public jurisdiction and an increased drop-out potential that reduces project scope after an ESCO is selected
Rangely Community: Colorado Northwest Community College, Rangely School District, Town of Rangely, Rio Blanco County	Pooled	Only 2 of the 4	Lots of effort! It took several years to get everyone on-board but produced a larger project.
Mesa Community: Mesa State College, Mesa County, local community college, airport, City of Grand Junction	Pooled	Only 1 of the 5	Unable to secure unifying momentum. Different ESCOs were selected. The college completed a $1 million project. The city completed a $2.5 million project.
City of Ouray and Town of Ridgeway	Aggregate then Pooled	No	Attempted twice. Communities split up because they could not agree on IGA agreement. Neither project was implemented because neither could find financing. Very time-consuming. Lots of paperwork. Very complicated.
City and County of Denver	Bundled	In-progress	Getting consensus and identifying a project sponsor.

Aggregated Projects

Colorado Projects or Examples

An ESCO attempted to aggregate a project between **Yuma County and the City of Wray.** The project eventually fell through but had some initial success due to the strong symbiotic relationship between the entities. Each public jurisdiction signed an interagency agreement to not worry about each other's savings but instead focus on total savings.

Chaffee County and City of Salida completed a project together with an ESCO. According to previous CEOs consultants the project was successful. Perhaps, in part, because the retrofitted building was to be occupied by both City of Salida staff and Chaffee County staff, and both jurisdictions had a vested interest in the success of the retrofit. The project was valued at about $1.1 million for Chaffee County and $1.2 million for the City of Salida.

An example of an aggregated project was provided by the State of Colorado's Attorney General's office for unemployment insurance. In September 2009, Wyoming, Colorado, Arizona and North Dakota (**WyCAN Consortium**) each received federal funding under a U.S. Department of Labor grant to create a cost-effective unemployment insurance system. In order to create a partnership they signed an interagency agreement on roles and responsibilities. The positives of this agreement was that it was an easy and formal way to clarify goals. The negatives included that interagency agreements are not legally binding; as such North Dakota bowed out of the agreement later on. When they were ready to sign a

single agreement with a vendor the Colorado Department of Labor signed the contract on behalf of the consortium. By being the lead signer the Colorado Department of Labor was liable if the agreement fell apart. To comply with each states' specific laws they had to attach addendums for each state. The positives of this structure was they were able to access economies of scale and learn from each other. The negatives were the time consuming process of getting everyone on board (i.e. North Dakotas legislature meets every other year) and the ability for states to leave the consortium.

National Models and/or Projects

In **New Mexico**, a regional Council of Governments (COG) took the initiative to aggregate three to four communities in a joint procurement after seeking assistance from the state energy office. After selecting a common ESCO the COG executed a master contract and each entities signed a task order to complete projects totaling $2.4 million. The COG executed a master contract and each entity signed a separate task order under the master contract. The State Energy Office provided contractual assistance and covered attorney costs to review the contract. The COG provided contract assistance and attorney review for a nominal fee of $5,000 per year to maintain continuity throughout the contract term.

North Carolina is currently working on their first aggregated project with a Community College, County and School District. The public entities have signed an interagency agreement to set up the structure and they fall under one EPC contract and one financing contract. It should be noted that North Carolina's utility bill payment structure differs greatly from Colorado. The County government is in charge of paying all of the utility bills for all public jurisdictions (i.e. K12, special districts, etc.) within their county. Many public jurisdictions, including K12, do not have taxing authority and therefore cannot take on debt. Due to the utility bill payment structure some of the financing issues that arise from aggregation are eliminated because one public jurisdiction (the County) is going out for financing. However, some of the other financing issues such as cross collateralization are still problematic and are yet to be resolved. Even with these advantages Len Hoey, North Carolina's EPC Program Manager, stated that it is a "painstaking affair (to get a project moving) and gets really complicated if an election happens." Len mentioned timing projects and the time consuming nature of organizing a project as the largest hurdles for aggregating projects.

Pooled Projects

Colorado Projects

There are many examples of pooled projects in Colorado.

In 2008, Garfield County created the **Garfield County New Energy Community Initiatives (GNECI)**. GNECI was awarded a $1.6 million grant through ARRA funding to help Roaring Fork communities implement energy projects. The innovative partnership of eight government entities used state legislation to allow governments to join together to provide a service or function that is most efficiently provided on a regional basis rather than by single governments. Part of this initiative was a joint EPC RFP. An ESCO was selected. Three communities (City of Glenwood, Colorado Mountain College, and City of Aspen) were big enough to make EPC work on their own and left GNECI. The Town of Parachute and Roaring Fork Transportation Authority left GNECI, but did not pursue an EPC project.

With the support of the GNECI, the three remaining participants moved ahead with an EPC (46 facilities received energy audits, 16 facilities underwent performance contracting). Some participants were unhappy with the project and felt they paid too much. A very small or no discount was applied as a benefit of economies of scale from pooling. For the few communities that did move ahead there was a tremendous amount of effort. Several participants did not believe the effort was worthwhile when compared with simply going out to bid separately.

The **Town of Meeker and Rio Blanco County** did a joint RFP. An ESCO won the project. Last minute the Town of Meeker decided to not move forward with the project. Rio Blanco's project was valued at about $410,000. An ESCO also won a project to work with **Central City, Gilpin County, and Town of Black Hawk.** Gilpin County ($2.8 million) and Central City ($482,000) moved forward.

Pitkin County, Pitkin Airport and the Pitkin Library District did a joint RFP. An ESCO won the project and struggled to get the project to move forward because they each had separate enterprise funds and decision-makers. As the project moved forward, entities dropped out due to various reasons including limited savings and loss of interest in EPC as a way to finance projects. An ESCO mentioned that there is a lot of risk to the ESCO for working on a pooled project including: lots of time and effort with separate meetings with each public jurisdiction and an increased drop-out potential that reduces project scope after an ESCO is selected.

The **Rangeley Community Partnership** was created between Colorado Northwest Community College (both Rangeley and Craig campuses), the Rangeley School District, Town of Rangeley and Rio Blanco County. The initiative was driven by an ESCO with some support from the CEO and the Office of State Architect. The project took several years to get everyone on board and became a "study in management". The ESCO worked with each entity's leadership team independently (i.e. college decision-makers plus a local steering committee, county commissioners, school district board, town council). The ESCO mentioned that it was important to have a single, local charismatic champion to bring people together. In the end only the school district ($302,050 project) and college moved forward (~$10.5 million project).

An ESCO led an initiative to get various public jurisdictions in **Mesa County** to do a joint RFP. They worked with Mesa State College, Mesa County, local community college, airport and Grand Junction. They were unable to get any unifying momentum. Two of the public jurisdictions went their separate ways and selected separate ESCOs. The college completed a $1 million project while the city completed a $2.5 million project.

The **City of Ouray and the Town of Ridgeway** partnered together on an aggregated EPC. The two entities have partnered together on projects in the past but they found it difficult for the two entities to agree on a common IGA agreement and therefore split into two separate projects or a pooled EPC. During their first attempted pooled EPC, the jurisdictions worked with an ESCO, but the project was not completed because no financing agency could be found that would finance such a small project; each project was approximately $350,000. A year later, each entity was approached by a different ESCO and the entities pooled together for a second EPC. Again, the projects were not completed because the consultant could not find a financing agency that would finance a small project (projects were approximately $350,000

again). It should be noted that the City of Ouray was not aware that any local or regional financing agencies were asked.

NATIONAL MODELS AND/OR PROJECTS

Kansas, through its Facilities Conservation Improvement Program, initiated a "bundling program" under an earlier administration ("bundled" follows the definition in this report of "pooled"). The program approached the major public entities in a region – city, county hospital and schools – some of which could be a 6-hour drive from the capitol city creating a lot of time consuming and expensive meetings. It established a Memorandum of Understanding (MOU) between pooled entities to issue a joint RFP to select a common ESCO.

The **Massachusetts** program has been especially successful at pooling projects (where they use the term "aggregating"). Since 2007 there have been nine pooled solicitations expedited by various regional organizations such as planning commissions and councils of government. One hundred and twenty three local governmental bodies participated (some more than once bringing the number to 165 or half of all the solicitations for local governmental bodies within the period) including cities, towns, and local and regional school districts. Forty-five have not yet moved forward, 40 cancelled their bid, and 80 contracted for projects ranging from the traditional comprehensive projects to onsite energy generation using photovoltaics to LED upgrades for streetlights. The completed projects were valued at approximately $55 million with annual energy cost savings of over $3.2 million.

Although the pooled solicitations account for half the solicitations, the resulting projects account for only 15% of the total investment statewide for local governmental bodies. This is due to the smaller size of the municipalities and schools that participate.

Massachusetts local government structure is different than in Colorado. Most counties were replaced by regional councils of governments or planning commissions that serve as counties, providing services to the towns and school districts in their regions, including purchasing services. The RFP is for the purpose of selecting a common ESCO to serve the geographical area, but contracts remain separate for each public jurisdiction. The few remaining counties, along with the regional Councils of Government that function as counties, act as "expediters" to organize the government entities in their regions. Each city, town, and school district agree to all language in the model contract. They pool their resources to do a solicitation (offering their facilities people, attorneys and others to contribute expertise).

Once the ESCO is jointly selected, an investment grade audit (IGA) commences with each public jurisdiction, followed by a contract. Each individual local governmental body negotiates and signs a contract, so each project stands on its own. Each public jurisdiction is in charge of their own financing and chooses to do general bonds.

Massachusetts did not attempt to do an overarching contract ("aggregating" as defined in this report) because of insurmountable problems that would create: 1) savings from one public jurisdiction could potentially be used to support another public jurisdiction's projects); and 2) even if the entities could

agree to supporting each other, problems could surface later as administrators change and question the agreement.

Statutes requires an owner's agent for projects over $1.5 million. As such, a consultant is not required to assist with small projects. However, half of the projects chose to have a consultant. To support the hiring of an owner's agent the program provided competitive grant funds of $12,000 per government to hire such a consultant.

Regional expeditors are hired to coordinate member communities, publish and file solicitations, and gather representatives from participating parties into an evaluation team. However they are not party to any contracts. The regional expeditors collect a fee for the services provided which served as an incentive. In order to get the regional expeditors interested a statewide all-day workshop were conducted for towns, school districts and other small government entities, along with regional entities (Councils of Government and counties).

Minnesota developed a contract structure such that the state holds a master contract and state or local jurisdictions sign work orders under the master contract to complete their individual projects.

Nevada, through the Public Facilities Retrofit Program of the Nevada Governor's Office of Energy (NGOE), rolled-out a pooled project of three entities in a remote region of the state. The school district superintendent drove the project as he had completed a successful EPC project at a different district. Along with the NGOE program staff, he encouraged the county and county utility to participate. The three entities selected a common ESCO. The ESCO, however, weighed the value of each project individually rather than viewing it as a larger pooled project and notified the county and utility that they did not have enough opportunity to justify a project. The remaining school district might continue on its own but the ESCO's unwillingness to view this as a pooled project put a damper on the district's enthusiasm.

In **Rhode Island** (as reported in late 2011), the Washington County Regional Planning Council (RPC) pooled projects at a regional level. RPC is a non-profit organization with a mission to realize the shared vision of the nine county municipalities, helping to identify and implement regional solutions. RPC initiated the idea to pool the towns and school districts in the region to develop an EPC project that would be large enough in scale to interest ESCOs. The projects were otherwise too small (most of the towns have a population of 6,000 – 7,000 with the biggest one of 29,000). The idea from the onset was to leverage savings with other available funding such as Energy Efficiency and Conservation Block Grant (EECBG) funds.

RPC worked with all 9 towns and 4 of the 6 school districts on a pooled EPC project. When American Recovery and Reinvestment Act (ARRA) funds became available, the Rhode Island Office of Energy Resources (the state's SEO) was supportive, directing EECBG grants to each town and to RPC for its oversight role. Audits were completed. The project was projected to involve 147 buildings or 3 million square feet at about $11 to $13 million in investment. ESCOs demonstrated their interest, as nine ESCOs responded to the RFP for the pooled project.

The project took a lot of time to organize such a diverse group of government entities. For example, in 18 months RPC attended 79 Town Council and School Committee meetings. Encouraging participation and

receiving agreement from the small towns and school districts was difficult. There are many dynamics at play between big and small towns and the school districts.

The keys to success were noted as:

- At first, there was no funding or policy backing for municipalities, so RPC wrote an energy policy that each town passed – this became a key to successful aggregation.
- RPC also established formal participation with a resolution from each town ("yes" to EPC and "yes" to working with RPC).
- RPC collected three years of energy data from all participants which helped them understand the potential size of a pooled project and interest ESCOs.
- RPC conducted preliminary audits and developed a single RFP for the pooled projects, customizing available model documents. A single ESCO was selected.
- For the audit, RPC held a 3-way agreement with the selected ESCO and the town or school district.
- For financing, RPC arranged an independent lease for each municipality/school district where all leases are bundled and marketed to financing companies to get the best rate.
- RPC was not contractually involved in the implementation performance contract.
- Full M&V reporting is not economically feasible because the individual town projects are so small. An "ESCO Light" process was developed where savings are predicted and reviewed and approved by RPC's engineer.

The towns would not have done a pooled project without RPC's involvement. RPC launched this with no funding and later received some EECBG grant funds to support their facilitation role. A fee will be assessed from each project's savings stream which reimburses RPC for its technical oversight.

Additional Feedback

Kentucky looked at pooling projects and throughout their initial assessment deemed that it was too expensive and time consuming to pursue.

Bundled Projects

Colorado Projects

It is already common practice to bundle projects in the CEO EPC program. Examples include the City and County of Denver and Colorado Department of Human Services projects, which compile different departments together to create a single project. In general, public jurisdictions compile departments whose funding comes from the general fund and avoid enterprise departments. As such, sometimes departments that utilize enterprise funds are not included in these projects and could provide a potential opportunity for CEO to support smaller projects.

National Models and/or Projects

Bundling projects is already a common practice and utilized by most, if not all, state programs.

APPENDIX D: REVIEW OF REQUIREMENTS TO AGGREGATE, POOL, AND BUNDLE PROJECTS

Table 30 provides a summary of the potential changes the CEO program would need to make in order to aggregate, pool, and/or bundle projects.

Table 30. Aggregation, Pooling, and Bundling Interaction with CEO EPC Program

Aggregating	Pooling	Bundling
Review of Financial Requirements		
• Legality of cross collateralizing between multiple public jurisdictions is unclear and remains a political hurdle • Cost of issuance remains high because lender needs to do a credit analysis on each public jurisdiction and bond council • Lots of work for lender to figure out different payment structures • Unclear on how to deal with varying credit ratings of different agencies • Timing of projects is a large issue for setting rates for financing package • Cross-collateralization can be a political barriers	• Smaller projects result in a higher cost of issuance • Lender needs to do a credit analysis of each public jurisdiction • Smaller projects might limit the amount of interested lenders	• Adds a little bit of work to lender to ensure all departments have signed off, various funding sources are compatible (i.e. enterprise and general fund requirements), and unique payment schedules are created.
Review of Technical and Programmatic Requirements		
• Need to rework all contracts to allow for multiple agencies to sign • Need to create an Interagency Agreement for jurisdictions to sign to agree upon terms and responsibilities • Need to create addendum to address each jurisdiction's specific laws • Lots of added work to ESCO to have all parties sign off and start projects on similar timelines • ESCO would need to spend money to have legal counsel understand new contract documents • Very time consuming to organize leading to additional costs for CEO • Expensive to have Attorney General and/or private law firm rework contracts	• RFP template updated but no changes to other documents • Lots of added work to ESCO to have all parties sign off and start projects on similar timelines. (Note: could be very little ESCO time if CEO or nonprofit is organizing) • Very time consuming to organize leading to additional costs	• No change needed to contracts (just provide separate schedules); however, revising IGA agreement exhibits and EPC schedules may be helpful • Adds a little bit of work to ESCOs to ensure all departments have signed off
Additional Considerations		
• Hard to have all projects move forward within same time period • Senate Bill 14-186 requirements, such as DOLA payments, could be triggered • Multiple motivations	• Hard to have all projects move forward within same time period • Multiple motivations	• Hard to have all projects move forward within same time period • While this structure helps smaller department projects it is not generally applicable for smaller or rural jurisdictions

Review of Financial Requirements

The actions listed below help address aggregated, pooled, and bundled project hurdles including: **attracting financing from community banks, TABOR requirements, Cash Flow requirements, Credit Rating effects, Guarantee requirements, Cross Collateralization issues, Issuance Date requirements** and **utilizing various Funding Sources.**

Ability and Willingness for Community Banks to Finance EPC Projects

Prior to starting this project, it was assumed that local banks would or could not provide funding for small and rural EPCs for one or more of the following reasons:

- Not familiar with EPC structure
- Not familiar with tax-exempt financing
- Limited appetite for tax exempt funding
- Traditionally many are agriculture lenders which is low risk (guaranteed by the Federal Government) and low margin
- Lending periods are too long. They do not want their limited capital to be tied up for a long time.
- Could not provide as competitive a rate as larger lenders

However, through conversations with several ESCOs and community banks it is clear this is not the case. Many community banks are interested in EPC projects and sometimes the use of community banks is commonplace. For example, an ESCO noted that they almost always use community banks in Kansas. Through our research and interviews the following additional reasons why using a community bank might be possible, if not preferable, were provided:

- Very willing, interested, and committed to invest and keep money in the local community
- Rural public jurisdiction entities feel more comfortable working with community banks
- Sometimes community banks provide better rates
- Lots of diligence and effort is needed for banks to understand the process but “once they get it, they get it” and understand that it is low risk investment
- Community banks do not want to take on large loans, therefore smaller projects are of greater interest to them
- Many of the costs (i.e. time and legal) associated with financing an EPC for a lender have already been lessened through the creation of template documents by the CEO
- Increased flexibility with procurement process

To increase the usage of local banks in the future, it was encouraged that the CEO create partnerships with the Independent Bankers for Colorado (http://ibcbanks.org/), Colorado Bankers Association (http://www.coloradobankers.org/), local Council of Governments, and other organizations to help get the word out regarding EPC. For example, the former EPC program in Pennsylvania worked with local banks to establish their interest in serving small-scale clients in the state, paving the way for financing before projects were developed.

Another assumption that was made prior to starting this project was that the larger lenders would not be willing to finance smaller projects. While some larger lenders noted that they were not interested in projects under $1 million, other lenders were willing to consider projects as small as $100k.

Financing Basics And Aggregation, Pooling, and Bundling Considerations

Municipality Legal Requirements

It was noted that many of the statutes that govern EPC do not apply to municipalities or school districts. As such, our analysis of legal and contracting requirements is limited because of the unique nature of the laws that govern procurement and financing in the 3,614 public jurisdictions in Colorado.

Taxpayers Bill of Rights (TABOR)

In 1992, Colorado voters approved the Taxpayer's Bill of Rights (TABOR), a constitutional amendment designed to restrain growth of all levels of government (state government, cities, counties, school districts and special districts) in Colorado. TABOR requires voter approval of revenue increases, puts limits on tax options, and applies revenue and spending limits. It is considered by many the most restrictive tax and spending law in the country. In addition, cuts in programmatic spending during a recession become permanent. As such, many governments budgets are stuck at recession levels even as demand for services and revenues have risen due to an increase in revenue and population. Since its passing, hundreds of cities, counties, school districts and special districts have successfully appealed to voters for a partial reprieve from some TABOR provisions.

TABOR influences EPC because it deeply effects the ability for government to pay for infrastructure. For example, TABOR restricts the ability to save because taxes that are collected above and beyond annual needs must be returned to taxpayers. In our interviews, almost every ESCO and lender mentioned that rural and small communities are usually risk adverse; and therefore, would prefer to pay for projects with cash instead of going out for financing. The ability to do this is extremely limited due to TABOR. Many communities rely on a bond election to fund projects; however according to the CDE the success rates for bond elections "have plummeted."

TABOR affects all projects in communities that have TABOR requirements, whether or not the projects are aggregated, pooled, and/or bundled.

Cash Flow Requirements

In statute, EPC requires that "the amount of actual savings for each year during the contract period shall exceed annual contract payments, including maintenance costs, to be made during such year by the state agency contracting for the utility cost-savings measure." In summary, the cash flows must remain positive. Higher interest rates reduces the potential scope of work because the savings must cover the costs.

Aggregation Considerations: Aggregation might lead to higher interest rates which can affect the scope of work (see *Credit Rating* subsection). Because the entire project must remain cash flow positive, it is possible that some entity's savings might cover the shortfall of other entities. It is unclear if this is legal for one public jurisdiction to essentially "bankroll" another through their savings; certainly there are political limitations to this proposal. Lastly, and perhaps most importantly, the entities would need to

decide beforehand how to split up the payment streams and commit to paying their proportion (whether or not the savings are realized). Public jurisdictions that enter this structure would have to create a formal agreement (i.e. through interagency agreement) between themselves.

Pooling Considerations: Each public jurisdiction would go out to financing on its own; therefore, each project would have to be cash flow positive. This might make it harder to finance smaller, more capital intensive projects. Smaller projects might have higher interest rates which would reduce the potential scope of work.

Bundling Considerations: The entire project must remain cash flow positive which means that some departments might have to provide above and beyond savings to cover the shortfall of other departments.

CREDIT RATING

In order to get financing, a government entity must acquire a credit rating, which evaluates their credit worthiness, likelihood of default, and ability to pay back the debt. Larger government agencies generally have a credit rating but many smaller ones might not. Attaining a credit rating can be a costly and time consuming endeavor and it is unlikely that a previously unrated entity would find it cost effective to seek a rating solely for an EPC financing. If an unrated jurisdiction does move forward with receiving a credit rating, the cost of issuance will rise; and therefore, the effective rate will rise. Lower costs of financing reduces contract payments which in return allows the public jurisdiction to expand their scope of work.

Aggregation Considerations: Per Senate bill 14-186 requirements, several public jurisdictions would aggregate their energy conservation measures into one project to attract financing. In order to finance the project a lender would look at all public jurisdictions credit ratings. As such, if one public jurisdiction has a poor credit rating then the entire pool is affected; potentially hindering some partnerships from moving forward. A higher interest rate means less energy conservation measures can be completed because cash flows must remain positive.

Pooling Considerations: In the pooling scenario many small jurisdictions would go out to financing on their own. As noted above many smaller jurisdictions do not necessarily have a credit rating. Attaining a credit rating can be expensive increasing the cost of issuance.

Bundling Considerations: None, because they are dealing with one jurisdiction.

GUARANTEE

Per State statute[13], an ESCO must guarantee that the sum of utility cost savings and operation and maintenance cost savings for each year during the measurement and verification (M&V) period (first three years of the contract period are mandatory for local governments and state governments) are not less than the calculated savings. After the M&V period has ended the guarantee is withdrawn.

Aggregation Considerations: If each public jurisdiction wants to understand whether or not savings are being made they will need to do M&V for every year of the project.

[13] See Colorado Revised Statutes 29-12.5-101

Pooling Considerations: None.

Bundling Considerations: If each department wants to understand whether or not savings are being made they will need to do M&V for every year of the project.

CROSS COLLATERALIZATION

Per the Financial Bid Package provided by the CEO, "the lessor will be secured by the customer's obligation to pay the lease payments, which are subject to annual appropriations and by a security interest in the equipment purchased for the energy and water savings measures to be installed by ESCO, which can be salvaged without damage to the facility to which such equipment is attached." If a public jurisdiction defaults a lessor is legally allowed to reclaim the equipment installed through the EPC.

Aggregations Considerations: If multiple jurisdictions come together to finance a project they are in essence cross collateralizing each other's equipment because if one public jurisdiction defaults then the other entity's equipment is at risk to be reclaimed by the lessor. Per conversations with several legal and financial experts it remains unclear if it is legal to cross collateralize between public jurisdictions. Certainly there would be political hurdles to overcome.

Pooling and Bundling Considerations: None

ISSUANCE DATE

In order for a lessor to commit to a fixed interest rate they have to be able to lock-in financing. The interest rate is held for a specific amount of time. After that time, the rate will be adjusted.

Aggregation Considerations: All projects would need to move forward around the same time to ensure that they could all benefit from the quoted interest rate. If they did not move forward during that time the lessor would need to adjust the rate for the entire pool.

Pooling and Bundling Considerations: None.

FUNDING SOURCES

Enterprise and general funds are rarely used on the same project because they trigger their own requirements. For example with enterprise funds the expenditures of services are separated into separate funds with its own financial statements, rather than commingled with the revenues and expenses of all other government activities.

Aggregation and Bundling Considerations: By blending multiple jurisdictions and departments into one project various funding sources can sometimes be incompatible.

Pooling Considerations: None.

POTENTIAL FINANCING COSTS AND SAVINGS

Financing costs are based off of the interest rate and cost of issuance. Interest rates are based off the market as well as how risky a lender believes the lessee to be. The cost of issuance can vary but estimates provided for this project noted that bond counsel can cost about $20-40K for a pool as small as $5 million.

In addition, utilizing a credit agency can cost an additional $10-15k per public jurisdiction. A credit agency would need to be utilized for each public jurisdiction that is going out for financing. This leads to a higher effective rate.

Smaller Project Considerations: The same due diligence process is used no matter what size the project is, hence is a larger burden on smaller projects than larger projects.

Rural Project Considerations: There are several risks that are associated with lending to rural communities:

- Potentially Shrinking Population: Rural Communities throughout the US, as well as many in Colorado, are shrinking. As such, the tax base is also potentially shrinking, which can make it harder for a rural community to pay back its obligations. See Appendix K for a more thorough review of population by region.
- Value of Buildings: Several of the lenders noted that they were concerned with a small and/or rural community's willingness/ability to potentially abandon a building. If the building can be abandoned then the "threat" to take back the equipment by a lessor becomes insignificant. In rural communities, unless a building has historic value it might be of greater risk to be abandoned. As one lender said, "*I know the City and County of Denver is not going to abandon the Webb building, so it is less risk to provide a loan to upgrade the building*."

Aggregation Considerations: Across the board, every lender and legal expert believed that going out for financing for an aggregated project would increase costs even if it created a bigger project. This is due to several reasons:

- Legal costs: Legal expertise would need to be accessed to understand whether or not it is possible to do this. In addition, agreements would need to be made between public jurisdictions to ensure that each public jurisdiction pays what they owe.
- Due diligence: Each public jurisdiction would need to be analyzed for credit worthiness, reducing potential savings.
- Time consuming: A lender would have to spend considerable staff time to structure a deal leading to additional costs.

Pooling Considerations: It is unclear whether or not pooling will reduce or increase costs. Some lenders believe that it would reduce costs because it could potentially encourage a lender to create a program to address the financing of small projects. Other savings could be created because a local bank could potentially become familiar with the EPC structure leading to less internal costs to review the contract. However, other lenders noted that smaller projects lead to a higher cost of issuance and it might prove hard, if not impossible, for smaller projects to obtain financing if the project is too small.

Bundling Considerations: Across the board it was believed that this structure reduces costs because it creates a bigger project which, in return attracts more competition from lenders. Because one public jurisdiction is going out for financing it leads to very little extra work. The standard financing bid package is used with different payment schedules attached for each department.

Review of Technical and Programmatic Requirements

The actions listed below help address aggregated, pooled, and bundled project hurdles including: **contract limitations** and **program complexity.**

Update Model Contracts

Current EPC contracts are an agreement between one participating jurisdiction and one ESCO. Current RFP template documents request that an ESCO provides services to one jurisdiction.

Aggregation Considerations: Contracts would need to be amended to accommodate agreements between multiple jurisdictions and one ESCO. Revisions may include: re-labeling various Investment Grade Audit (IGA) agreement exhibits and EPC schedules, miscellaneous text throughout the IGA agreement and the EPC, and placeholders for each jurisdictions' general conditions. Language would need to be added to protect participating jurisdictions in the event that one of the jurisdictions backed out of the agreement. The RFP template would need to spell out the proposed agreement between multiple jurisdictions and the ESCO and the RFP template would need to allow each jurisdiction to include their unique building information.

Pooling Considerations: No contract revisions are required for pooled EPC projects since the agreement will continue to remain between the ESCO and the participating jurisdiction. The RFP template would need to spell out the proposed agreement between multiple jurisdictions and the ESCO and the RFP template would need to allow each jurisdiction to include their unique building information.

Bundling Considerations: While no formal contract modifications are required for bundled projects, the scope of work for the IGA should be clearly defined in the IGA agreement prior to execution. Because each building may have different funding sources, it should be documented during the signing of the IGA agreement how the operation costs and utility costs are paid for in each building, how the savings from one building will impact savings for the overall project, how the savings from one building will impact savings for another building, and what could happen if one building sees a shortfall in energy savings. Primary decision-makers from each building, including facility directors, maintenance staff, and administration staff, must acknowledge that they understand and accept the flow of savings. Previously, each building may have acted as independent entities under one common jurisdiction; however, a bundled EPC project will require that these different buildings act together and share energy savings and energy shortfalls. To formally record these agreements, the CEO may consider adding an additional IGA agreement exhibit for bundled EPC projects. No changes to the RFP are required.

Account for Additional CEO Staff Time and CEO EPC Budget to Facilitate Projects

Aggregating, pooling and even bundling projects will add complexity to the project; and therefore, these projects may require additional CEO staff and CEO consultant time to facilitate the EPC project. Staff and consultant time directly translates into cost and may result in a larger financial burden to the CEO. Specific stages of the project process that may require additional support include: (1) program outreach; (2) project development; (3) RFP support; (4) IGA agreement review (and negotiation if required); (5) IGA report review; (6) EPC contract review (and negotiation if required); and (7) M&V report review. ESCOs have reported that aggregated, pooled, and bundled EPC projects require more meetings and formal

presentations to various decision-making bodies than traditional EPC projects. Staff and consultants may also be requested to attend additional project meetings and to present at additional Board and Council meetings.

Aggregation Considerations: Discussions with interviewees have indicated that aggregated projects require significant more involvement from the CEO and the ESCO. The CEO should be aware that, although there is only one project, each unique jurisdiction may require individual attention from the development of the project through the M&V phase. Additionally, the CEO and its consultants may be required to attend several meetings for each individual jurisdiction and for the group as a whole. It should be noted that when a jurisdiction is not present at a particular meeting, these jurisdictions will need to be caught up to speed and this process may require additional time.

Pooling Considerations: The CEO and its consultants will need to provide additional support to the participating jurisdictions during the development of the RFP. This may also include initial outreach meetings with the pooled jurisdictions.

Bundling Considerations: The amount of time required by the CEO and its consultants may vary depending on the working relationships between each participating department. If the departments do not have a history of collaboration the CEO and its consultants will need to provide additional support from the development of the project through the M&V phase. Additionally, the CEO and its consultants may be required to attend several meetings for each individual department and for the group as a whole. It should be noted that when a department is not present at a particular meeting, these departments will need to be caught up to speed and this process may require additional time.

Support ESCOs with Project Development and Be Available to Answer Questions from the Jurisdictions

As with the CEO and its consultants, ESCOs will have a more significant time investment with jurisdictions involved in an aggregated, pooled, or bundled project. The CEO should support these ESCOs to the degree possible to help the ESCO more quickly develop and land a project. While the CEO currently supports the jurisdictions throughout the process, the CEO may need to be more available to the participating jurisdictions to help answer questions and shoulder part of the burden from the ESCOs.

Aggregation Considerations: Aggregated projects require significant multi-jurisdictional coordination and are expected to take considerably more time than pooled or bundled projects. It is expected that CEO will be the most involved during these projects.

Pooling Considerations: Additional time investment may only be necessary during the RFP stage; and thus, ESCO support may not be required.

Bundling Considerations: Bundled projects *may* require multi-departmental coordination and are expected to take considerably more time than pooled projects. It is expected that CEO will be more involved during these projects than typical EPC projects.

Create Standards for Success Documents Specific to Each Project Type

The current Standards for Success document is provided to every EPC participant at the onset of an EPC project. This document describes the discrete stages of an EPC project and it is geared towards a project that involves one jurisdiction and one ESCO. An aggregated, pooled, or bundled project adds complexity to a standard EPC project and consensus between multiple jurisdictions or multiple departments is required to ensure that everyone is on the same page and that the project meets specific milestone dates. These additional layers of programmatic requirements should be embedded in specific Standards for Success documents.

Aggregation Considerations: Amend Standards for Success to identify unique roles and responsibilities of each participating jurisdiction throughout the process. Every step of the Standards for Success will need to be amended. Be sure that the document stresses consensus building among the multiple jurisdictions.

Pooling Considerations: Amend Step 1. - Introduction and Step 2. - ESCO Selection of the Standards for Success to identify unique roles and responsibilities of each participating jurisdiction.

Bundling Considerations: Amend Step 1. - Introduction of the Standards for Success to identify unique roles and responsibilities of each participating department. Be sure that the document stresses consensus building among the multiple departments.

Potential Financing Costs and Savings

Whether it's an aggregated, pooled, or bundled EPC project, effort from the CEO and from ESCOs will be greater than for a traditional EPC project which will directly translate into increased costs.

Aggregation Considerations: As the most complex structure, it is assumed that aggregated projects will increase program development and program support costs to the CEO and increase overhead costs to the ESCOs.

Pooling Considerations: As the least complex structure, it is assumed that pooled projects will increase program development and program support costs to the CEO and have very little cost impacts to the ESCOs.

Bundling Considerations: As a moderately complex structure, it is assumed that bundled projects will slightly increase program development and program support costs to the CEO and may increase overhead costs to the ESCOs.

Additional Requirements

The actions listed below help to address aggregated, pooled, and bundled project barriers including: **consensus, program complexity, timing, and significant investment**.

Identify Common Goals and Common Plan

Jurisdictions are used to working independently, and as one interview participant said, "*it can be hard enough to get one board to come to consensus, let alone multiple boards*." When multiple jurisdictions are working together on an EPC they must consider the interests of their partners. Although this is an easy

idea in theory, it is very difficult to put into practice. To help jurisdiction or departments work together in an aggregated, pooled, or bundled scenario, identify common goals and a common plan for implementation. Ensure that participants see their involvement as a true partnership, where the project must be successful for the entire group if it is going to be successful for just one jurisdiction.

Aggregation Considerations: Encourage the ESCOs to help the participating jurisdictions record a common goal and common plan for implementation. Ensure that decision-makers from all jurisdictions sign off on the goals and plan.

Pooling Considerations: While participating jurisdictions may not need a plan for implementation discuss how selecting the same ESCO to serve each entity potentially provides economies of scale that could positively impact the project cost for each jurisdiction. If savings are to be realized from economies of scale, such as joint site visits, joint timing of equipment installation, etc., encourage the participating jurisdictions to record a common goal and timeline to achieve the economies of scale.

Bundling Considerations: Encourage the ESCOs to help the participating departments record a common goal and common plan for implementation. Ensure that decision-makers from all departments sign off on the goals and plan.

Promote Aggregating EPC Projects for Those Jurisdictions that Routinely Partner Together

Jurisdictions that have not partnered together in the past or, worse yet, have had failed partnerships may not make as good as aggregated or pooled EPC partnerships as those jurisdictions that have routinely partnered together and have good working relationships (likewise for multi-departmental jurisdictions). It is likely that these jurisdictions have previously signed an intergovernmental-agreement or a similar agreement and understand how each partner would function within a partnership. It is also likely that these jurisdictions have a good understanding of one another's decision-making bodies, styles, and preferences and would be willing to work together to create a successful EPC project.

Aggregation Considerations: Encourage aggregating EPC projects for small communities that have a good and symbiotic working relationship and have partnered together on past projects. The one successful aggregated project was from the City of Salida and Chaffee County partly because the retrofitted building was to be occupied by both of their staff, and both jurisdictions had a vested interest in the success of the retrofit.

Pooling Considerations: Encourage pooling EPC projects for small communities that have a good and symbiotic working relationship and have partnered together on past projects.

Bundling Considerations: Encourage bundling EPC projects for jurisdictions whose individual departments have had a good and symbiotic working relationship and have partnered together on past projects.

Invest Significant Time in Initial Outreach and Program Development

No matter the form of EPC, imparting a thorough understanding of EPC and the process of implementation and M&V is one of the main hurdles that the CEO and the ESCO community face. Adding another level of complexity using an aggregating, pooling, or bundling mechanism has the potential to further confuse EPC

participants. The CEO and the ESCO community should ensure that all participants in an aggregated, pooled, or bundled EPC project have a functioning understanding of an aggregated, pooled, or bundled EPC project and clearly understand all project expectations before the IGA agreement is signed. This will help reduce confusion for decision-making bodies, and this will help ensure that each jurisdiction is supporting the common goal of a successful and shared EPC project. The CEO and the ESCO community should connect with each jurisdiction separately and with all participating jurisdictions together.

Aggregation Considerations: Each jurisdiction needs to understand how the project will play out for their respective jurisdiction and for the entire group. For example, participants in an aggregated project should understand:

- Structure of energy savings and EPC payments.
- Proposed economies of scale and the consequences if economies of scale are not met.
- How the timing of various meetings and on-site visits must be coordinated to achieve potential cost savings and/or meet ESCO deadlines.
- Legal and financial ramifications from inter-governmental agreements.
- Roles and responsibilities of the various stakeholders including the ESCOs and the partnering jurisdictions.
- That although each jurisdiction is acting on its own, the group of jurisdictions is acting together to achieve more substantial energy savings. This may require that various decision-making bodies consider the needs of each participating jurisdiction.

Pooling Considerations: Each jurisdiction needs to understand how the project will play out for their respective jurisdiction and for the entire group. For example, participants in a pooled project should understand:

- Each EPC project will be individually managed and implemented by the ESCO; although there is no legal requirement for the jurisdictions to work together once the ESCO has been selected by the group economies of scale may be achieved if the projects progress at the same rate.

Bundling Considerations: Each department needs to understand how the project will play out for their respective department and for the entire group. For example, participants in a bundled project should understand:

- The respective roles and responsibilities of each building and/or department.
- Structure of energy savings and EPC payments.
- That although each building and/or department may have acted on its own previously, the group of buildings and/or departments is now working together to achieve ultimate energy savings for the governing jurisdictions.
- If previous buildings and/or departments worked in “silos” building and/or department managers must work together to create a successful EPC project.

It is recommended that either the CEO and/or the ESCO have language in a deliverable or even in a contract document that includes a sign-off sheet for the participant to acknowledge that they understand the items above.

Create a Calendar of Participating Jurisdictions Significant Events

For aggregated and pooled projects, encourage ESCOs to create a calendar of the various Board and Council meetings, significant events such as the last day of school and the first day of school, student testing, etc. of each participating jurisdiction and suggest that major deadlines and deliverables are built around those meetings. Share this calendar with all participating jurisdictions and encourage all participants to support the completion of various program steps by these event dates.

Aggregation Considerations: Create a calendar of significant events of each participating jurisdiction (i.e., City Council meetings, end of school year date, etc.), share the calendar with all participating jurisdictions, and encourage ESCO to design milestones and deliverables around each event.

Pooling Considerations: Create a calendar of significant events of each participating jurisdiction (i.e., City Council meetings, end of school year date, etc.), share the calendar with all participating jurisdictions, and encourage ESCO to design milestones and deliverables around each event. While it is not necessary that individual projects progress at the same rate, economies of scale may be achieved if the projects do meet certain milestones in parallel.

Bundling Considerations: Not applicable.

Streamline the Process

Interview participants often cited significant paperwork and complicated and time-consuming processes as a significant challenge to aggregated, pooled, and bundled EPC projects. It is expected that modified contract documents and a significant investment in initial outreach and program development will help simplify the more advanced stages of the EPC project.

Aggregation and Bundling Considerations: Simplify the process as much as possible. To the extent feasible, reduce unnecessary paperwork and streamline the process for aggregated and bundled EPC projects.

Pooling Considerations: No revisions are necessary for pooled projects.

Promote Program Through Local Energy Champion

Due to the complex nature of an aggregated or pooled EPC project, participating jurisdictions may need additional assistance. Previous attempts at aggregated programs showed that possible success could have resulted from better management of participants. A local organization, such as a non-profit, could help manage the jurisdictions, coordinate meetings, and be an advocate on behalf of the jurisdictions. While CEO's consultants currently fulfill these roles, having an additional partner to facilitate the process "on-the-ground" could help expedite the delivery of the information and impart confidence in the participants.

Clean Energy Economy for the Region (CLEER) supported the Garfield County New Energy Community Initiatives (GNECI) project. Much of the success that the GNECI project experienced was attributed to CLEER's assistance. According to Senate Bill 14-186 DOLA would serve in this capacity.

Aggregation Considerations: Identify a local energy champion to promote and support the aggregated EPC project. This energy champion can be an individual or a local non-profit organization. Consider ways to compensate energy champions.

Pooling Considerations: Identify a local energy champion to promote and support the pooled EPC project. This energy champion can be an individual or a local non-profit organization.

Bundling Considerations: Identify an internal champion to facilitate communications.

Potential Financing Costs and Savings

Whether multiple jurisdictions/departments projects are aggregated, pooled, or bundled, effort from the CEO and from ESCOs will be greater than for a traditional EPC project which will directly translate into increased costs.

Aggregation Considerations: As the most complex structure, it is assumed that aggregated projects will significantly increase program development and program support costs to the CEO and increase overhead costs to the ESCOs.

Pooling Considerations: As the least complex structure, it is assumed that pooled projects will slightly increase program development and program support costs to the CEO and have very little cost impacts to the ESCOs.

Bundling Considerations: As a moderately complex structure, it is assumed that bundled projects will slightly increase program development and program support costs to the CEO and may increase overhead costs to the ESCOs. Many times these costs can be justified by the expanded project scope.

APPENDIX E: VARIOUS SMALL AND RURAL COMMUNITIES DEFINITIONS

The following outlines the various small and rural definitions that could affect the CEO program. These are not necessarily the definitions used to define small and rural entities in Colorado for this report.

There are dozens of definitions for small and rural. In addition, the terms small and rural are used interchangeably. These definitions are created by various government entities, researchers, and policymakers to help distinguish rural from urban areas. The definitions can range from population density to geographic isolation to population size (common thresholds for rural are between 2,500 to 50,000 people). Whether or not a community fits within various definitions directly affects whether or not they are eligible for both federal and local funds. Therefore, it was decided by the Colorado Energy Office (CEO) and Merrill Group, LLC to provide several definitions that will make it easier to understand which communities are eligible for funding resources that could potential impact the CEO Energy Performance Contracting (EPC) Program.

Each funding source is included as a column in the Excel spreadsheet that lists all public jurisdictions in Colorado. When a public jurisdiction fits within the program's definition of rural the entity is marked as *rural* in the spreadsheet. Note that all of the definitions are only for cities, towns, school districts, and counties. Therefore, they do not apply to special districts which can cover multiple towns, regions, and unpopulated areas. However, if a special district is within only one county, and under the definition of rural the entire county applies, then the special district will be marked as rural as well to note that it is eligible for funding.

While we will use all of the definitions listed below to analyze the availability of resources, we think it is important to have one definition for rural to be used throughout the report. Therefore, we propose the following definitions which align with the 2010 Census:

- **Urban** is an area comprised "of a densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. To qualify as an urban area, the territory identified according to criteria must encompass at least 2,500 people."
- **Rural** encompasses all population, housing, and territory not included within an urban area.

In addition, we propose that the following definition is used for small. This definition is based off of personal experience an ESCO's perspective of what size opportunity would be considered small due to low building stock and population size.[14]

- **Small** is a city or town with less than 5,000 people, a county with less than 20,000, and a school district with less than 6,500 students.

Note an entity can be both rural and small or urban and small.

[14] Note: While population is not always a perfect indicator of utility spend it is one of the better indicators.

Census Data Definition

The 2010 Census definitions of urban and rural are used by many policymakers and grants; therefore, it is included in our analysis. For more information on the 2010 Census's definition of rural and urban see: https://www.census.gov/geo/reference/ua/urban-rural-2010.html. For more information on 2010 Census Data for Colorado see: http://dola.colorado.gov/demog-cms/content/census-data

- **Urban** is an area comprised "of a densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. To qualify as an urban area, the territory identified according to criteria must encompass at least 2,500 people."
- **Rural** encompasses all population, housing, and territory not included within an urban area.

See below for maps that apply six different population density limits to Colorado's communities.

Colorado Department of Education (CDE)

The CDE provides their own definitions of "rural" and "small rural" school districts. This list is updated regularly with the most recent version dated January 20, 2015 which can be found here: http://www.cde.state.co.us/ruraledcouncil/rural_definition_spreadsheet_042114

- **Rural:** A Colorado school district is determined to be rural depending on the size of the district, the distance from the nearest large urban/urbanized area, and if the student enrollment is approximately 6,500 students or less.
- **Small Rural:** Small rural districts are those districts meeting the same criteria as a rural school district but with a student population of less than 1,000 students.

These definitions are used to address the specialized needs of rural and small rural schools, as well as to disperse funding.

Colorado Department of Local Affairs (DOLA) Definitions

DOLA utilizes various urban and rural definitions to match with the federal funding that they are tasked with dispersing. As such there are different definitions used for different programs. The following outlines the definitions for various funding sources that might be applicable for EPC participants in rural and small communities.

Community Development Block Grant (CDBG)

The CDBG Program's primary objective is to develop viable communities by providing decent housing, suitable living environment, and expanded economic opportunities to persons of low and moderate income. The grants are dispersed to local government by DOLA and can be used on housing, economic

development, or public facilities projects. The projects are only allowed to be done in "**non-entitlement areas**" which is defined as cities with populations of less than 50,000 and counties with less than 200,000."

More information can be found here: http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251592177272

Energy/Mineral Impact Assistance Fund (EIAF)

The EIAF grants are given by statute to recipients that are "political subdivisions socially or economically impacted by the development, processing or energy conversion of fuels and minerals". Political subdivisions include municipalities, counties, school districts and most special districts. State agencies are also eligible recipients (of federal mineral lease funds) provided they have specific spending authority from the General Assembly. By statute, eligible activities consist of the "planning, construction and maintenance of public facilities" and "the provision of public services." Examples of public facilities include water and sewer infrastructure, town/city halls, county courthouses, community centers, public roads, and emergency medical and fire protection facilities and equipment.

Tier I grant awards of up to $200,000, while Tier II grants range from $200,001 to $2,000,000. Tier III are very rarely given and only made available when there is enough funding. These projects range from $1,000,000-$10,000,000. To be competitive, Tier III applicants must be a project where several jurisdictions together request assistance to solve a multi-jurisdiction problem. More information on the program can be found here: http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251594715231

While these grants are not given specifically to small or rural (therefore no definitions are provided) communities, applications are scored higher if the applicant is in a community affected by energy conversion of fuels and minerals. Many less populated counties are more affected by energy conversion therefore this might be a good funding resource for small and rural EPCs. The spreadsheet has each public sector entity ranked by their Local Energy Impact Score (http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251643814291). The lowest score is 1 while the highest score (most energy conversion activity) is 10.

United States Department of Agriculture (USDA) Definitions

USDA uses dozens of definitions for rural and urban under their Rural Development programs; therefore, we focused on the definitions that might affect potential funding sources for the CEO EPC program. More information on the various definitions of rural can be found here: http://www.ers.usda.gov/topics/rural-economy-population/rural-classifications.aspx

Community Facilities Direct Loan and Grant Program Definition

The Community Facilities Direct Loan and Grant Program provides affordable funding to develop essential community facilities in rural areas which is defined as a facility that provides "an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial or business undertakings." Examples include health care facilities, public

facilities (i.e. street improvements, town halls, airport hangers), community support services (i.e. community centers), educational services, local food systems (i.e. greenhouses), and public safety services (i.e. fire departments, public works vehicles or equipment). Eligible borrowers included public bodies, community-based non-profit and federally-recognized tribes.

In order to be eligible for the program an entity must be from a rural area which is defined as "areas including cities, villages, townships and towns including Federally Recognized Tribal Lands with no more than 20,000 residents according to the latest U.S. Census Data are eligible for this program." Priority is given to communities with a population of 5,500 or less and low income communities with a median household income below 80% of the state nonmetropolitan median household income.

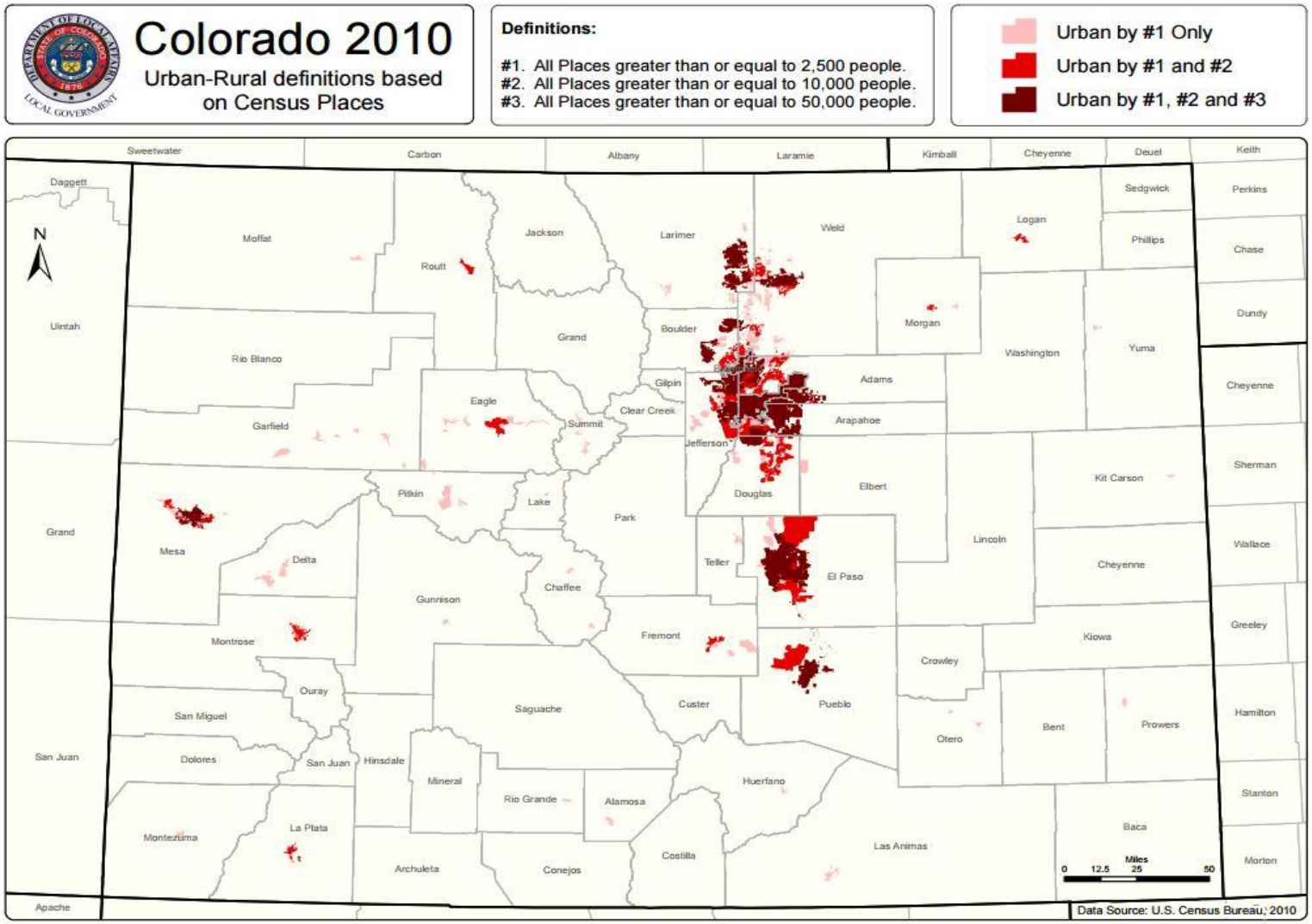
This loan program cannot be leveraged to finance lease purchase agreement designed into Colorado EPC program to accommodate TABOR requirements. TABOR does not apply to enterprise-funded jurisdictions or ones that pay for an EPC with cash or grants, therefore these entities could potentially utilize these grants.

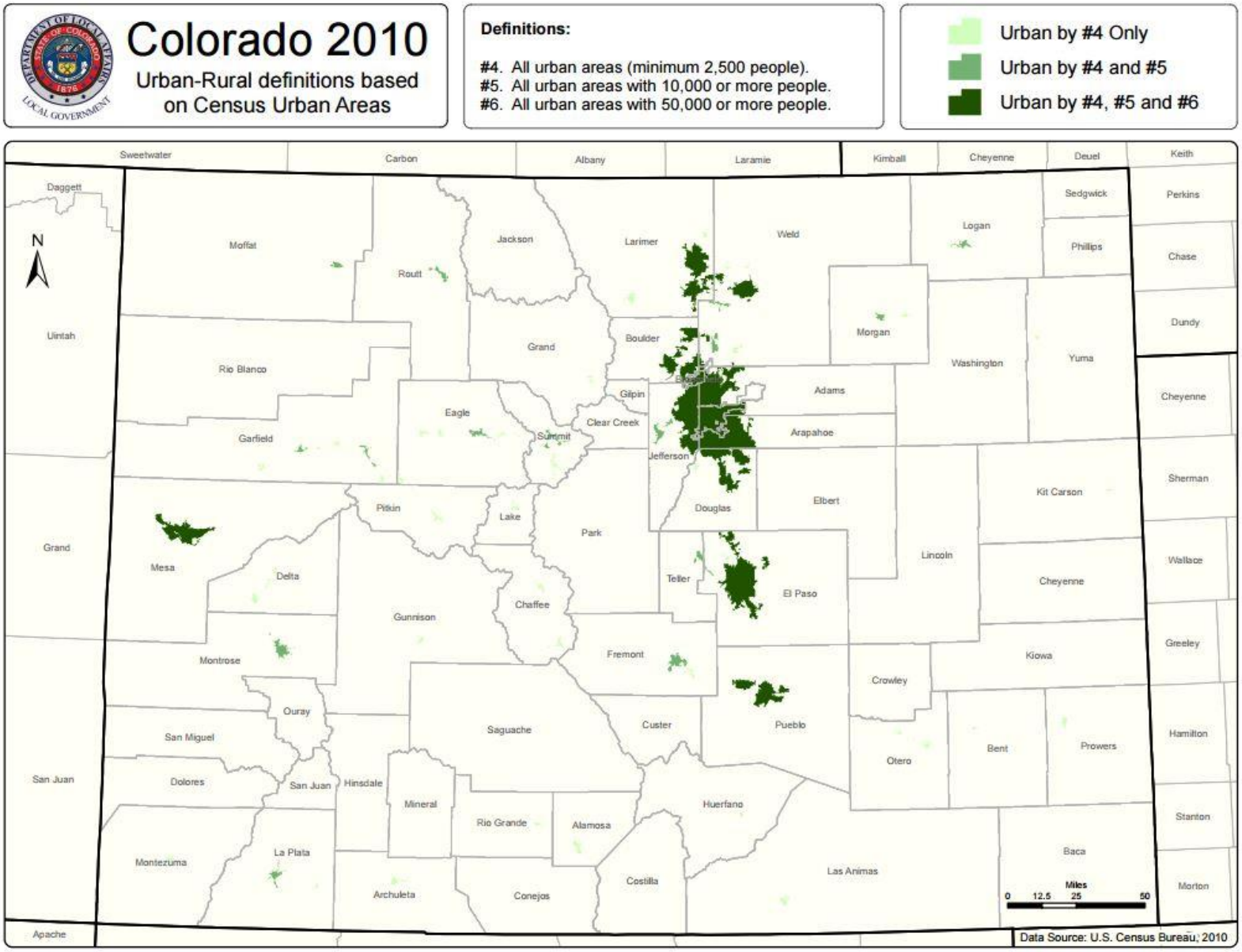
More information can be found here: http://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program

Rural-Urban Continuum Codes

The Rural-Urban Continuum Codes form a classification scheme that **"**distinguishes metropolitan counties by the population size of their metro area, and nonmetropolitan counties by degree of urbanization and adjacency to a metro area." This allows researchers to break county data into finer residential groups. This data is not necessarily used for funding but provides an overview of the population and rural/urban ratio of a County therefore it is included on the master spreadsheet.

Urban-Rural Definitions based on Census Urban Areas, Census 2010




Colorado 2010
Urban-Rural definitions based on Census Urban Areas
Definitions:
#4. All urban areas (minimum 2,500 people).
#5. All urban areas with 10,000 or more people.
#6. All urban areas with 50,000 or more people.
Urban by #4 Only
Urban by #4 and #5
Urban by #4, #5 and #6
N
Sweetwater
Carbon
Albany
Laramie
Kimball
Cheyenne
Deuel
Keith
Daggett
Moffat
Routt
Jackson
Larimer
Weld
Logan
Sedgwick
Perkins
Phillips
Chase
Uintah
Rio Blanco
Grand
Boulder
Morgan
Washington
Yuma
Dundy
Gilpin
Adams
Eagle
Clear Creek
Arapahoe
Garfield
Summit
Jefferson
Cheyenne
Sherman
Pitkin
Lake
Douglas
Elbert
Kit Carson
Park
Mesa
Delta
Teller
El Paso
Lincoln
Wallace
Chaffee
Gunnison
Cheyenne
Fremont
Kiowa
Greeley
Montrose
Crowley
Ouray
Custer
Pueblo
Saguache
San Miguel
Otero
Bent
Prowers
Hamilton
San Juan
Dolores
San Juan
Hinsdale
Mineral
Huerfano
Rio Grande
Alamosa
Stanton
Montezuma
La Plata
Baca
Las Animas
Costilla
Archuleta
Conejos
Morton
Miles
0 12.5 25 50
Apache
Data Source: U.S. Census Bureau, 2010

APPENDIX F: SNAPSHOT OF PUBLIC JURISDICTION SPREADSHEET

Name	Market	Year EPC construction last completed	Total EPC investments	County	Urban Rural Continuum Codes (only applies to counties)	Poverty Percentage	% of County Rural per Census Definitions	Counties Energy Impact Score
Adams	County	2012	$ 2,518,345	Adams	Metro	13.2%	4%	7
Alamosa	County			Alamosa	Neither	25.6%	37%	3
Arapahoe	County	2007	$ 10,093,933	Arapahoe	Metro	12.3%	2%	6
Archuleta	County			Archuleta	Neither	15.1%	59%	6
Baca	County			Baca	Rural	19.1%	100%	6
Bent	County			Bent	Neither	33.0%	38%	5
Boulder	County			Boulder	Metro	13.5%	9%	7
Broomfield	County			Broomfield	Metro	6.4%	1%	4
Chaffee	County	2010	$ 1,140,917	Chaffee	Neither	13.0%	37%	5
Cheyenne	County			Cheyenne	Rural	13.1%	100%	9
Clear Creek	County			Clear Creek	Metro	9.1%	100%	9
Conejos	County			Conejos	Rural	22.9%	100%	3
Costilla	County			Costilla	Rural	26.0%	100%	3
Crowley	County			Crowley	Rural	43.2%	100%	3
Custer	County			Custer	Rural	14.4%	100%	3
Delta	County			Delta	Neither	15.1%	63%	9
Denver	County			Denver	Metro	18.7%	0%	5
Dolores	County			Dolores	Rural	14.0%	100%	8
Douglas	County			Douglas	Metro	3.6%	10%	3
Eagle	County	2010	$ 714,453	Eagle	Neither	9.5%	20%	3
El Paso	County	2012	$ 2,886,151	El Paso	Metro	6.7%	9%	4
Elbert	County			Elbert	Metro	11.4%	100%	5
Fremont	County	2012	$ 2,120,196	Fremont	Neither	19.7%	26%	6
Garfield	County	2012	$ 787,923	Garfield	Neither	12.4%	24%	9
Gilpin	County	2014	$ 2,861,884	Gilpin	Metro	8.1%	100%	5
Grand	County			Grand	Neither	11.0%	83%	6
Gunnison	County	2012	$ 1,168,919	Gunnison	Neither	13.7%	59%	6
Hinsdale	County			Hinsdale	Rural	10.6%	100%	6
Huerfano	County			Huerfano	Neither	22.8%	56%	6
Jackson	County			Jackson	Rural	15.7%	100%	7
Jefferson	County	2013	$ 9,894,484	Jefferson	Metro	9.1%	7%	6
Kiowa	County			Kiowa	Rural	12.9%	100%	7
Kit Carson	County			Kit Carson	Neither	15.1%	49%	6
La Plata	County	2011	$ 1,728,790	La Plata	Neither	14.7%	60%	8
Lake	County			Lake	Neither	12.4%	31%	6
Larimer	County			Larimer	Metro	13.8%	12%	6
Las Animas	County	2013	$ 1,053,297	Las Animas	Neither	18.0%	41%	9
Lincoln	County			Lincoln	Rural	19.1%	100%	8
Logan	County			Logan	Neither	16.9%	29%	6
Mesa	County	2011	$ 1,226,687	Mesa	Metro	15.4%	13%	9
Mineral	County			Mineral	Rural	9.9%	100%	4
Moffat	County	2013	$ 585,789	Moffat	Neither	11.5%	27%	10
Montezuma	County	2011	$ 2,185,639	Montezuma	Neither	19.1%	67%	7
Montrose	County			Montrose	Neither	15.1%	45%	8
Morgan	County			Morgan	Neither	13.5%	33%	7
Otero	County	2013	$ 304,184	Otero	Neither	22.5%	34%	3
Ouray	County	2010	$ 187,357	Ouray	Rural	9.8%	100%	5
Park	County			Park	Metro	10.3%	100%	6
Phillips	County			Phillips	Rural	12.4%	100%	6
Pitkin	County			Pitkin	Neither	7.3%	44%	3
Prowers	County	1999	$ 592,438	Prowers	Neither	21.7%	38%	5
Pueblo	County	2012	$ 4,160,222	Pueblo	Metro	20.1%	14%	3
Rio Blanco	County	2012	$ 538,702	Rio Blanco	Rural	10.7%	100%	10
Rio Grande	County	2014	$ 410,687	Rio Grande	Neither	17.9%	63%	3
Routt	County	2012	$ 1,505,471	Routt	Neither	8.9%	45%	9
Saguache	County			Saguache	Rural	29.4%	100%	4
San Juan	County			San Juan	Rural	15.7%	100%	5
San Miguel	County			San Miguel	Rural	11.9%	100%	6
Sedgwick	County			Sedgwick	Rural	14.5%	100%	4
Summit	County			Summit	Neither	9.3%	20%	5
Teller	County			Teller	Metro	8.4%	63%	9
Washington	County			Washington	Rural	14.0%	100%	8
Weld	County			Weld	Metro	13.2%	20%	9
Yuma	County			Yuma	Neither	13.0%	65%	8

APPENDIX G: REVIEW OF EPC BARRIERS AND SOLUTIONS TO EPC BARRIERS FOR SMALL AND RURAL COMMUNITIES

The following provides a more in-depth dive to the barriers highlighted throughout the report.

FINANCIAL BARRIERS AND SOLUTIONS TO OVERCOME BARRIERS

KEY BARRIERS

The key barriers identified were (1) difficulty in accessing capital and/or financing; (2) perception that EPC is too expensive; and (3) desire to not take on debt.

The key financial barrier is access to capital and/or financing. The CEO's network of regular EPC financiers generally finance projects that have a scope size of at least $1,000,000. While projects with a scope size between $500,000 and $1,000,000 have been financed, very few projects with a scope size less than $500,000 ever receive financing from the CEO's regular network of EPC financiers. It is assumed that a majority of Colorado's small and rural community EPC projects will fall below the $500,000 threshold.

In addition to the small project size, rural communities are further discouraged because many perceive ESCO's rates as being too high when compared to local contractor pricing, in-house implementation, and/or design build contracts. And this is an issue that the ESCO community has been trying to combat for years. In addition, many communities find the ESCO pricing table confusing and believe that overhead and profit are one and the same. As one community stated, some of this perception may come from local contractors who feel entitled to work on construction projects in their community.

Many communities are skeptical of financing and hesitate to take on debt (especially long-term debt) and many communities prefer to do things on their own and pay for improvements upfront.

Conflicting feedback: Although many interview participants cited small project size as a financial barrier, others stated that small projects can be financed by traditional EPC financiers. The true financial barrier may be the willingness to finance a small project by a large financier and/or the willingness of the ESCO to pursue the project and/or identify smaller financiers.

SECONDARY BARRIERS

The secondary barriers identified were 1) high IGA costs; (2) concern that savings will not be met; (3) lack of funding support; (4) hesitant to "dip into public trough"; and (5) shrinking tax base.

Rural community partners and several ESCOs noted that high IGA costs are a barrier. A few communities that recently completed EPC projects were concerned that the guaranteed savings were not appearing on utility bills. Although this may not be a barrier to EPC projects now, it could be a significant barrier if the reputation of the EPC savings guarantee becomes jeopardized.

Small projects are typically capital intensive; aging buildings have a lot of outdated mechanical equipment and require building envelope improvements. Often, there is not sufficient savings to cover the cost of the capital equipment leaving these projects heavily dependent on supplemental funding support in the form of grants. Several participants noted that there was a significant lack of funding support, including the identification of

grants and applying for grants, leaving a large capital burden to the community. Much of rural Colorado is located in conservative communities that do not favor public subsidies in the form of rebates. Communities may be hesitant to take full advantage of rebates with the fear that they will be "dipping into the public trough". Over the last few decades we have seen a shrinking Rural America; and therefore, a shrinking tax base. There is simply less money available to perform public services. Refer to the Appendix K for a thorough analysis of the population increases and decreases seen throughout Colorado since 2000.

Conflicting feedback*:* Although IGA costs were cited as a barrier by community partners and representatives and by ESCOs, the rural communities themselves did not often identify high IGA costs as a major barrier.

INITIAL LIST OF SOLUTIONS TO OVERCOME FINANCIAL BARRIERS

F1) Identify and develop partnerships with financiers that will finance projects with a project scope of less than $1,000,000. And when possible, establish a pool of local or regional financiers that are potentially prepared to finance local EPC projects

F2) Create partnerships with banking organizations such as Independent Bankers of Colorado and The Colorado Bankers Association to get the word out regarding EPC financing.

F3) Create a State program to support financing through a credit enhancement mechanism (i.e. interest buy downs, creating a wrap to guarantee multiple project) or low interest loans (i.e. revolving loan fund).

F4) Encourage an honest and transparent discussion about ESCO pricing. Both the CEO and the ESCO community should ensure that communities and community allies understand how to compare ESCO pricing against local contractor pricing and in-house pricing. The CEO and ESCOs must agree if EPC is truly less expensive than a conventional design-build project. In cases when EPC is more expensive, describe the added value that the ESCO brings to the table, such as the timeliness of improvements, expertise, qualifications, turn-key approach, and most importantly, the energy savings guarantee.

F5) Simplify the ESCO pricing sheet and define all pricing terms.

F6) If possible, engage local contractors and find a place for them in the project so they can also serve as energy champions for the small and rural communities.

F7) Differentiate the EPC lease purchase agreement from traditional debt.

F8) Explain the "lost opportunity cost" by comparing the long-term costs of doing nothing versus implementing an EPC project.

F9) Explain the potential volatility of long-term utility prices and the ability of mitigating this risk through EPC.

F10) At the project onset identify potential funding sources such as DOLA's Energy/Mineral Impact Assistance Fund, U.S. Department of Agriculture's (USDA) Community Facilities Grants, CDE Building Excellent Schools Today (BEST) grant, utility rebates, etc. Demonstrate how these sources were used in previous EPC projects.

F11) Develop an acceptable model for applying for grants on behalf of the communities. Get a commitment from the ESCO during the onset of the TEA stage that the ESCO will help identify and/or apply for grants before the EPC is signed.

F12) Consider IGA audit assistance in the form of a grant at 100% of the cost or 50% of the cost or in the form of a revolving loan fund. It should be noted that there were mixed views on the effectiveness of this approach.

F13) Provide financial assistance grants to buy-down financing transaction costs.

F14) Establish clear and reasonable utility and operational saving expectations from the project onset. For instance, have a frank discussion about when and why communities may not see the guarantee savings on utility bills and help them understand how they can optimize and sustain energy savings.

F15) Encourage M&V Option C (utility bill analysis) and phase out M&V Options A and B.

Technical Barriers and Solutions to Overcome Barriers

Key Barriers

The key barriers identified were 1) no long-term maintenance support and 2) small project scope.

After installation is complete many times the ESCO hardly, if ever, visits the community. When/if the installed equipment fails or the building operator cannot/does not operate the equipment as intended, the community is left to fix the problem on their own with the assistance of local contractors. Unfortunately, several participants described a very poor to good local contractor base. While the contractors can typically help with straightforward repairs, complex HVAC equipment repairs and/or building controls may be out of the realm of their expertise. In some cases, the community no longer knows whom to contact at the ESCO for help. ESCOs remain hesitant to make the trip to the site because of long distances and substantial time requirements. As one community said, "*When (ESCO) leaves we are left with our local plumber and we need to know that our plumber can maintain the equipment, but right now they don't*." ESCOs should design projects that meet local ability to operate and maintain equipment.

It is no surprise that one of the leading technical obstacles is related to project size. Communities and ESCOs have a difficult time designing a project that is: (1) able to pay for itself; (2) attractive to the ESCO community; and (3) attractive to the financing community.

Conflicting feedback: Although several ESCOs have committed to working with small and rural communities and some have completed successful projects, there has not been significant project development or even attempted project development with small and rural communities in the State of Colorado.

Secondary Barriers

The secondary barriers identified were 1) equipment broke after installation; 2) perception that equipment should not be fixed/replaced unless it is broken; 3) communities have no interest in advanced systems; and 4) superficial scope and M&V to control costs.

A few communities cited instances in which equipment broke after installation and caused embarrassment to the community. This may be a consequence of little long-term maintenance support or a function of large construction project; however, if the quality of the installation comes into question it could jeopardize future EPC projects. Many participants described the rural "do-it-ourselves" mentality and this approach may suggest that equipment does not need to be repaired and/or replaced unless it is broken. Furthermore, communities prefer to operate equipment that they are comfortable with, which may preclude complex and advanced building systems. Presumably, ESCOs develop projects that will pay for themselves (or as close to as possible), yet many communities require large capital improvement projects to address aging buildings and equipment. ESCOs should design projects that meet local ability to operate and maintain equipment. To create a self-funding

projects ESCOs may simplify the scope and shrink project sizes. And to further control costs ESCOs may select low-level M&V efforts such as stipulated savings and/or M&V Option A.

Conflicting feedback: ESCOs claim that they uncover all the savings potential and projects are narrowed down at the request of the community; however, others claim that there is significant opportunity left on the table.

Initial List of Solutions to Overcome Technical Barriers

T1) Build a qualified, local contractor base to support long-term equipment maintenance.
T2) Have a frank discussion with facility staff about their capability and ability to maintain equipment long-term.
T3) Specify equipment that can be managed and maintained effectively by on-site maintenance staff. Have a frank discuss with local contractor base to understand their capabilities to maintain equipment.
T4) Invest additional time (versus traditional EPC) to train in-house staff. Document training in the form of training manuals and videos for long-lasting support. Recommend that all new staff receive training.
T5) Clearly indicate how long-term maintenance supports the long-term potential for savings and the energy savings guarantee and include this in the contract. Require facility signature acknowledging that staff has been adequately trained.
T6) Reach out to and establish a network of local organizations that could either support or provide access to long-term maintenance. Local organizations may include non-profit organizations, utility companies, chamber of commerce, workforce unions, etc.
T7) Encourage ESCOs to dig deeper; some are accused of only skimming the services. Consider packaging traditional EPC measures with occupant behavior programs and renewable energy projects.
T8) Develop protocols to verify and guarantee long-term operating savings from behavioral modification programs, maintenance staff training, scheduling programs, etc.
T9) Consider various financing and funding support as described in the aforementioned financing solutions
T10) Separate out simple energy conservation measures (ECM), such as lighting, from more complicated ECMs, such as building controls.
T11) Make pre-proposal site visits optional so that ESCOs can invest that time to site visits during the actual project.

Programmatic Barriers and Solutions to Overcome Barriers

It should be noted that a majority of the programmatic barriers are applicable to both small and rural communities as well as for large and more urban communities.

Key Barriers

The key barriers were 1) limited understanding of the process; and 2) lack of staff resources.

Of all the barriers identified by interview participants the greatest barrier was the community participants' limited of understanding of EPC. Albeit, in concept most communities grasp EPC; yet, it is the intricacies of the process that many communities have a difficult time grasping. And it is the intricacies of the project that are

crucial for success. In addition, as projects evolve over a one-year to five-year period community staff and ESCO staff change and the project's legacy tends to get lost.

While EPC is a turn-key offering, significant staff time is required to manage the project on behalf of the community. Often, this is performed by facility directors, financial managers, and or the community's chief administrators, such as superintendents or County Administrators. In small and rural communities a community may be run be a very small team or even by one individual. Adding an additional role as EPC project manager can result in significant burden to an already stressed team. Compounding that with a limited understanding of the process itself, the stage is set for confusion and an overloaded community team. Through their experience working with communities, the Merrill Group team has noticed that such issues, such as confusion and a tendency to feel overwhelmed, can lead to mistrust of the ESCO, the process, and even of the CEO.

Conflicting feedback: Upon initial engagement with the community, the ESCO and the CEO work with the community to provide EPC outreach and education until the EPC participant acknowledges that they fully understand the program. Yet, interview participants have stated that these efforts may not always be enough to build a strong understanding and acceptance of the program.

SECONDARY BARRIERS

The secondary barriers were 1) mistrust of state government; 2) too much paperwork; 3) contracts are not written for schools; 4) "we can do it on our own" mentality; 5) majority of savings are stipulated; 6) consequences of decisions not known; 7) limited understanding of M&V process; and 8) there are alternatives to EPC.

Although not widely cited as a program barrier by rural communities themselves, several rural community allies and ESCOs noted that rural communities are slightly skeptical of state involvement and assistance. It was stated that mistrust might have been a result of historic poor working relationships with state agencies and the perception that many state agencies located in the Front Range only serve the needs of Front Range communities.

A lot of paper work is involved and much of the paperwork is very technical and/or legal in nature. The complexity of the paperwork and the sheer volume of paperwork further add to staff's project management time. Although access to standard contract documents was regularly cited as a significant EPC benefit, it should be noted that technically, contract documents apply more for local governments than school districts.[15]

Many of Colorado's rural communities possess a very independent attitude and one that cultivates a "do it ourselves" mentality. Handing over the management of community buildings and building operations, if only temporarily, is in direct conflict with this deep-seated belief. Communities that have completed an EPC were concerned that it was only after the first M&V report was delivered that they truly understood the consequences of an M&V effort, which heavily relied on stipulated savings measures. Many community allies noted that the communities with which they work did not need to use EPC because there were alternative program offerings such as CDE's BEST program.

[15] This was noted during an interview with Becker Stowe Partners, LLC. School districts have their own statutes and they do not always align with the rules laid out in the EPC contracts. Technically schools could work with CCI or CML and "wouldn't have to use EPC statutes at all."

Conflicting feedback: Although mistrust of state governments and CEO was cited a program barrier, most interview participants also stated that CEO's third-party support was critical to program success.

INITIAL LIST OF SOLUTIONS TO OVERCOME PROGRAMMATIC BARRIERS

P1) Develop a guidance document for EPC document management and encourage its use by all EPC participants.

P2) Develop and perform an extensive outreach and education campaign. Consider including visual representations of the process and showcasing success stories and lessons learned.

P3) Increase publicity of EPC; get the word out. Provide simple marketing material and be sure that this marketing material is ubiquitous within organizations that serve rural communities, including local non-profit organizations and state government agencies.

P4) Present EPC at conferences attended by rural communities, such as conferences held by: Northeastern Colorado Managers, Colorado Municipal League (CML), Special District Association (SDA), Colorado Counties, Inc. (CCI), and Rural Education Council.

P5) Conduct EPC webinars.

P6) Identify a local sponsor that can support the community. Local sponsor could be an individual or non-profit organization.

P7) Travel across the state to rural areas and host EPC workshops with a local sponsor.

P8) Meet face-to-face with communities and establish strong relationships built on trust. Emphasis the CEO's role as a critical community partner.

P9) In addition to the traditional community EPC leads, i.e., facility directors, superintendents, etc., provide outreach and education on EPC related topics to the entire community, local contractors, and local banks.

P10) Improve education and training of in-house resources.

P11) Identify willing mentors from communities that recently completed EPC.

P12) Improve the explanation and education on the savings guarantee and associated M&V efforts.

P13) Develop partnerships with organizations that serve rural communities. Consider partnerships with organizations such as: CML, DOLA, Rural Education Council, CCI, SDA, and the State Historic Registry.

P14) Develop partnerships with local utility companies.

P15) Encourage M&V Option C (utility bill analysis).

P16) Evaluate the advantages and disadvantages of various energy efficiency implementation programs and compare to EPC. Share this information with the community participants.

P17) Improve standard contract language for school districts. Get buy-in from school district contract experts and the CDE.

P18) If possible, simplify contracts for smaller projects.

P19) Establish a master contract for a willing partner to hold (DOLA, Council of Government, etc.) with task orders for individual projects.

P20) Facilitate funding of a part-time energy and project manager to help manage projects in a region, to be paid through a grant with support from the EPC.

P21) Provide guidelines on managing a project, including the Life of Contract document management requirements (developed by U.S. Department of Energy with the Hawaii State Energy Office).

P22) Actively pool projects through a joint RFP, focusing on all government entities within a region including water/waste-water treatment plants, hospital/healthcare facilities and county housing

authorities (for non-HUD-funded properties). Help develop a team approach and a common goal among participants.

P23) Exercise the Cooperative Purchasing statute for a lead government entity to run a procurement for a pool.

P24) Establish an advisory group and conduct an outreach and pooling effort in one region as a pilot.

Other barriers and Solutions

Key Barriers

The key barriers identified were 1) distance/time dissuades ESCO from travel; 2) lack of interest in efficiency; and 3) feeling of isolation from Front Range.

It is well known within the industry that the time required to develop an EPC may be the same amount for a large project as it is for a small project, even though the smaller project will deliver a smaller Return on Investment for the ESCO. Couple this with significant driving time to in-person meetings; ESCOs may be reluctant to invest the overhead in developing a project. Also, many ESCOs have business models that require fast turnarounds from marketing to implementation of projects. Since there can be a lack of resources in small and rural communities, it is likely that these projects can take a time to develop.

Although EPC projects are designed to help the communities save money, many communities are just warming to the idea that cost savings can be achieved with energy efficiency. When they think of EPC they may only consider efficiency; and therefore, never even consider EPC as an option that would interest them or be a viable option for their buildings.

Although both the CEO and the ESCO community have committed to serving the entire state, there is the perception that if a business or state organization is located in the Front Range, especially Denver, than those organizations only concentrate on the needs of Front Range communities.

Conflicting feedback: Although several ESCOs have committed to working with small and rural communities there have only been 11 projects completed within rural communities. Perhaps this is due to the distance and substantial time it takes to develop a small EPC. As one public jurisdiction stated, "*ESCOs will do small EPC projects, if they are located within the Front Range*."

Secondary Barriers

The secondary barriers were 1) communities tend to love old buildings; 2) political climate changes; 3) tendency to focus on immediate needs; and 4) inability for ESCO to connect with rural audience.

One interview participant described a building that was so old and in such bad condition that a pencil could poke through the walls, yet the community resisted improving the quality of the building for fear that its character would be jeopardized. Some of the residents of these communities strongly connect with the history of the community and its buildings and these same residents may be reluctant to engage with an outside contractor to change the appearance of these buildings. While many ECMs will not affect the overall look of a historic building, some do. For example, in order for a historic building to receive funding from the State Historical Fund buildings are not allowed to have updated windows.

As with any community, urban, rural, or otherwise, advisory boards and decision-making bodies frequently change and with this change may come an entirely new approach to energy conservation and achieving cost savings and to EPC. Many times a change in decision- making bodies requires an ESCO to visit the community again to receive a green light to move forward.

Due to a lack of resources, communities may tend to focus on the immediate needs at hand and are unwilling or unable to forecast and identify with upcoming building operation needs.

Due to many ESCO's headquarters being in the Front Range, many small communities find that ESCOs have trouble connecting with a rural audience. An interview participant explained that during an EPC 101 presentation the ESCO shared their previous EPC projects, but unfortunately, each project took place in a large and urban area and presented the proposed project as if they were implementing it in the Front Range. The community was disappointed and did not pursue the project because they did not feel that the ESCO really understood them or their needs as a small and rural community. As one participant said, "*You are thinking like a Front Range person and not like a Western Slope person*".

INITIAL LIST OF SOLUTIONS TO OVERCOME OTHER BARRIERS

O1) Encourage ESCOs to establish a local presence or to be available as often as possible.

O2) Encourage the CEO to establish a local presence or to be available as often as possible.

O3) Establish a local network of support for the community. Enlist local non-profit organizations, local financing agencies, and perhaps even local contractors to provide on-the-ground support when required and when the ESCO and or the CEO are not available.

O4) Research appropriate terminology. Consider emphasizing the cost savings component of EPC. Consider stressing energy and water conservation, maintenance cost savings, energy security, hedging financial risks, and other terms that are more popular and better received than energy efficiency. Messaging should refer to cost savings and utility and operational savings to encompass all the savings streams applied to EPC projects. Consider changing "Energy Performance Contracting" to "Performance Contracting" to broaden the perspective.

O5) Promote the technologies that could be included such as street lighting, retro-commissioning, and community solar gardens. Describe their benefits.

O6) Share success stories from similar communities.

O7) Identify a local individual or local organization to champion energy conservation within the area. Encourage this individual to build relationships between the community and the CEO and the ESCO community.

O8) In addition to the CEO, establish local third-party support; consider enlisting the services of local non-profit organizations.

O9) Pre-qualify ESCOs by region. They will self-select based on distance and initial overhead investment.

O10) Allow ESCOs to perform feasibility studies to build rapport with communities.

O11) Establish partnerships.

O12) Perform a utility bill analysis and use the analysis to demonstrate cost saving opportunities and consider using the analysis as an outreach and education tool.

O13) Present EPC in the context of a rural approach; shy away from urban examples and urban implementation strategies.

Frequency of Cited Program Barriers

The following table summarizes the most commonly mentioned program barriers cited in interviews.

Topic	Number of times the topic was Cited
No long-term support including in-house expertise and local contractors	9
Lack of outreach and education; little understanding of the process	8
Hard to find enough scope to pay for project	8
Difficult to access capital and financing; few available financial incentives	7
ESCOs will not make the trip to investigate the project because of distance and lots of time. And, TEA costs do not reflect true cost of doing an audit	7
Perception that EPC is too expensive	6
Lack of interest in energy efficiency; investment in energy efficiency can be viewed as taking away from other needs	6
Skeptical of financing; do not want to take on debt	6
Lack of staff and staff resources to manage project	4
Feeling of isolation from Front Range; prefer to work with locals	4
Mistrust of state government agencies/CEO	4
Communities tend to love old buildings, do not want to change; issues with making changes under State Historic Registry	3
IGA costs	3
Concern that savings will not be met	2
Equipment broke after installation; embarrassing	2
Too much paperwork	2
No need to fix equipment unless broken	2
“We can do it on our own” mentality	2
Political climate changes; consistent board turnover	2
Shortsightedness	1
Lack of support for identifying additional funding support	1
Poor M&V; most measures have stipulated savings	1
Consequences of decisions not known until after project is complete	1
Do not understand M&V process	1
Inability to connect with rural audience	1
Lots of work	1
Rebates dipping into public trough; unfavorable	1
ESCO is not interested	1
There are alternatives to EPC	1
Rural America is shrinking; tax base is shrinking	1
Standard contracts are not written for school districts	1
M&V costs; try to cut costs with more simple M&V	1
Superficial scope to control costs	1
No real systems and they don’t want advanced systems	1

Frequency of Cited Program Recommendations

The following table summarizes the most commonly cited solutions and recommendations from interviews.

Outreach and Education was Cited 31 Times as a Solution
1. Showcase success stories
2. Increase PR and publicity on the benefits of EPC to rural communities
3. Share best practices and lessons learned
4. Make sure all agencies really understand EPC
5. Have a dedicated person/company provide education via workshops to contractors and community on a subset of topics, e.g., pools, WWTP, etc.
6. Share more success stories
7. Present at conferences
8. Present at Northeastern Colorado Manager conference
9. Present at CML district meetings
10. Educate and train in-house expertise
11. Provide a better explanation of M&V
12. Increase understanding of EPC
13. Focus on education for rural school districts and superintendents
14. Need simple marketing information
15. Talk about the guarantee and what it really means
16. Provide a visual explanation of the process
17. Improve education
18. Roadshow with local sponsor
19. Face-to-face meetings; build relationships
20. Attend annual CML, CCI, and Special District Association conferences
21. Educate rural areas
22. Improve mistrust of state government; reframe as a partner
23. Present program as an outline, not a formal program that must be imposed upon recipients
24. Attend more conferences
25. Have an open and frank discussion about costs and expectations
26. Get out there in rural communities
27. Educate local banks
28. Attract institutions through education and communication
29. Provide M&V education
30. Provide education
31. Help entities understand the financial side

Developing Partnerships was Cited 13 Times as a Solution
1. Partner with DOLA 2. Work with utility companies 3. Develop partnerships with local non-profits 4. Partner with CML 5. Partner with DOLA 6. Partner with CML 7. Partner with DOLA 8. Talk to Tina Goar at the Rural Education Council 9. Talk to State Historic Registry 10. Partner with Colorado Municipal League, Colorado Counties, Inc., and Special District Associations; they have a lot of clout 11. Partner with CML 12. Partner with DOLA 13. Partner with DOLA
Updating Model was Cited 13 Times as a Solution
1. Consider approaching different types of ECMs separately (i.e., lighting from HVAC) 2. Use savings from solar projects to cover capital equipment costs 3. Do not use old model; start fresh 4. Consider a different payment structure 5. Consider RCM programs 6. Think outside the box for school districts; school districts do not have to follow state statutes (i.e., EPC statute) 7. Always use M&V Option C (utility bill analysis) 8. Make RFP response site visits optional 9. Pre-qualify ESCOs by region; ESCOs will self-select 10. Pre-qualify ESCOs by region; ESCOs will self-select 11. Collect utility data and perform benchmarking 12. Let ESCO do feasibility study 13. Let ESCO do feasibility study
Provide Financial Support was Cited 10 Times as a Solution
1. Provide financial assistance to help with transaction costs 2. Provide a list of potential funding and financing organizations 3. Have the state or DOLA do a wrap guarantee for a pooled project 4. Provide supplemental funding. 5. State to cover IGA costs 6. Support audit costs 7. Support transaction costs 8. Help pre-identify financing funding 9. Provide a backstop of audit costs of 50% 10. Revolving fund for audit support

Establish Local Presence was Cited 8 times as a Solution
1. ESCO has local base 2. Have a local, qualified contractor base to support long-term maintenance 3. Strengthen local contracting expertise to assist with EPC implementation and maintenance 4. Have a local person provide hands on assistance 5. Hold entire community accountable for energy savings 6. Involve local non-profits 7. Need local person to help build trust between ESCO and community 8. Roadshow with local sponsor; energy champion must be local
Provide Third Party Support was cited 8 Times as a Solution
1. Local non-profit to champion efforts 2. Provide mentorship 3. Have a local person provide hands on assistance 4. Encourage non-profits to provide hands on assistance 5. Involve local non-profits 6. Have third-party review construction when complete 7. Need a third-party to manage the program 8. Have a third-party conduct a quasi-review of the project
Training Local Resources was Cited 6 Times as a Solution
1. Build a qualified, local contractor base to support long-term maintenance 2. Strengthen local contracting expertise to assist with EPC implementation and maintenance 3. Have a dedicated person/company provide education via workshops to contractors and community on a subset of topics, e.g., pools, WWTP, etc. 4. Train local contractors to maintain equipment 5. Educate and train in-house expertise 6. Educate and train in-house expertise

APPENDIX H: POTENTIAL FUNDING SOURCES

Through our research, several additional funding sources were highlighted as potential resources for small and rural communities.

COLORADO DEPARTMENT OF EDUCATION (CDE) BUILDING EXCELLENT SCHOOLS TODAY (BEST) PROGRAM

Established in 2008, BEST provides an annual amount of funding in the form of competitive grants to school districts, charter schools, institute charter schools, boards of cooperative educational services, and the Colorado School for the Deaf and the Blind. BEST funds can be used for the construction of new schools as well as general construction and renovation of existing school facility systems and structures. The program requires a match which can be hard for smaller K12 schools to provide. No preference is given to rural or small schools. See more at: https://www.cde.state.co.us/cdefinance/capconstbest

CDE QUALIFIED ZONE ACADEMY BONDS (QZABS)

QZABs allow qualified schools to borrow at nominal interest rates (as low as zero percent) to renovate and/or modernize an existing school structure. QZABs cannot be used for new construction. In order to be eligible at least 35 percent of the school's students must be eligible for free or reduced-price lunch under the federal lunch program. More information can be found here: https://www.cde.state.co.us/cdefinance/capconstqzab

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) SMALL-COMMUNITY WATER AND WASTEWATER GRANTS

The grants assist small communities (under 5,000 that are able to get a certificate of financial need from the Division of Local Government) with costs associated with design and construction of projects that protect public health and water quality. Generally, communities with incomes and house values below the state median with system user charges and debt per household above state averages and a low ratio of reserves to a project's required cost will be determined to have financial need. Communities may apply for financial assistance up to $950,000 per project for a total allocation of $9.5 million in fiscal year 2015. More information can be found at: https://www.colorado.gov/pacific/cdphe/small-communities-water-and-wastewater-grants

Additional Water Quality CDPHE grants can be found here: https://www.colorado.gov/pacific/cdphe/wq-grants

CDPHE SUPPLEMENTAL ENVIRONMENTAL PROJECTS

Supplemental Environmental Projects are funds that come from penalties for environmental violations and are redirected into environmentally beneficial projects. SEP grants can be utilized by public jurisdictions in the violators region for energy efficiency and renewable energy projects. More information can be found here: https://www.colorado.gov/pacific/cdphe/supplemental-environmental-projects

COLORADO ENERGY OFFICE RENEWABLE ENERGY AND ENERGY EFFICIENCY FOR SCHOOLS (REEES) LOAN PROGRAM

The REEES program provides school districts with loans for renewable energy and energy efficiency projects if they are unable to secure private sector financing. To apply for a loan, a school district must receive approval from its board of education and have a team dedicated to the project. Schools can receive assistance with the creation of an energy efficiency plan. More information can be found at the CEO website: www.colorado.gov/energy

Colorado Water Conservation Board (CWCB)

CWCB provides numerous loans and grants for water-related projects. More information can be found here: http://cwcb.state.co.us/LoansGrants/Pages/LoansGrantsHome.aspx

Database of State Incentives for Renewables & Efficiency (DSIRE)

DSIRE (http://www.dsireusa.org/) does not provide grants or loans but is a comprehensive source of information on incentives and policies that support renewable energy and energy efficiency.

Colorado Water Resources and Power Development Authority (CWRPDA)

The CWRPDA provides low-cost financing to governmental agencies in Colorado primarily for water and wastewater infrastructure development. CWRPDA has four main financing programs:

- Drinking Water Revolving Fund: Part of the State Revolving Fund. For 2015, the Authority Board of Directors is offering loans of less than $2,500,000 as direct loans at an interest rate of 2% or less if the community qualifies as disadvantaged. Loans may also receive a 0% interest rate if the project qualifies as "Green" and the "Green"" requirement has not been met by the Authority. Loans of over $2,500,000 are leveraged loans which will require the issuance of municipal bonds. These loans will have subsidized interest rates at 70% of market rates.
- Water Pollution Control Revolving Fund: Part of the State Revolving Fund. For 2015, the Authority Board of Directors is offering loans of less than $2,500,000 as direct loans at an interest rate of 2% or less if the community qualifies as disadvantaged. Loans may also receive a 0% interest rate if the project qualifies as "Green" and the "Green"" requirement has not been met by the Authority. Loans of over $2,500,000 are leveraged loans which will require the issuance of municipal bonds. These loans will have subsidized interest rates at 70% of market rates.
- Small Hydropower Loan Program: Assists in the development of hydropower facilities, 5 megawatts or less, with a 20 year 2% loan up to $2 million.
- Water Revenue Bond Program: Provides funds up to $500 million, without legislative review, to entities for water and wastewater projects not eligible under the above programs. CWRPDA subsidizes the costs of the bond issuance for the program.

CWRPDA is also administering an Interim Loan Program. More information can be found at: http://www.cwrpda.com/

Department of Local Affairs Energy/Mineral Impact Assistance Fund (EIAF)

The EIAF grants are given by statute to recipients that are "political subdivisions socially or economically impacted by the development, processing or energy conversion of fuels and minerals". Political subdivisions include municipalities, counties, school districts and most special districts. State agencies are also eligible recipients provided they have specific spending authority from the General Assembly. By statute, eligible activities consist of the "planning, construction and maintenance of public facilities" and "the provision of public services." Examples of public facilities include water/sewer infrastructure, town/city halls, county courthouses, community centers, public roads, and emergency medical and fire protection facilities and equipment.

Tier I grant awards of up to $200,000, while Tier II grants range from $200,001 to $2,000,000. Tier III are very rarely given and only made available when there is enough funding. These projects range from $1,000,000-

$10,000,000. To be competitive, Tier III applicants must be a project where several jurisdictions together request assistance to solve a multi-jurisdiction problem. More information on the program can be found here: http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251594715231

While these grants are not given specifically to small or rural communities, applications are scored higher if the applicant is in a community affected by energy conversion of fuels and minerals. Many less populated counties are affected by energy conversion therefore this might be a good funding resource for small and rural EPCs. The lowest score is one while the highest score (most energy conversion activity) is ten. The following rural counties have scores of seven or above: Rio Blanco, Cheyenne, Dolores, Lincoln, Washington, Jackson, and Kiowa.

Department of Local Affairs Community Development Block Grant (CDBG)

The CDBG Program's primary objective is to develop viable communities by providing decent housing, suitable living environment, and expanded economic opportunities to persons of low and moderate income. The grants are dispersed to local government by DOLA and can be used on housing, economic development, or public facilities projects. The projects are only allowed to be done in "non-entitlement areas" which is defined as cities with populations of less than 50,000 and counties with less than 200,000." More information can be found here: http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251592177272

Great Outdoors Colorado (GOCO) School Play Yard Initiative

This initiative provides grants for improved playgrounds and outdoor classrooms that inspire more active physical play and enhance learning about nature and the environment. While most EPC's do not cover school yard updates, the Colorado Department of Education noted that GOCO is a key partner for them and therefore could be a future partner for the CEO. More information can be found here: http://www.goco.org/grants/school-play-yard-initiative

United States Department of Agriculture Community Facilities Direct Loan and Grant Program

The Community Facilities Direct Loan and Grant Program (http://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program) provides funding to develop essential community facilities in rural areas which is defined as a facility that provides "an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial or business undertakings." Examples include health care facilities, public facilities (i.e. street improvements, town halls, airport hangers), community support services (i.e. community centers), educational services, local food systems (i.e. greenhouses), and public safety services (i.e. fire departments, public works equipment). Eligible borrowers include public bodies, community-based non-profit and federally-recognized tribes.

In order to be eligible for the program an entity must be from a rural area which is defined as "areas including cities, villages, townships and towns including Federally Recognized Tribal Lands with no more than 20,000 residents according to the latest U.S. Census Data are eligible for this program." Priority is given to communities with a population of 5,500 or less and low income communities with a median household income below 80% of the state nonmetropolitan median household income.

This loan program cannot be leveraged to finance lease purchase agreement designed into Colorado EPC program to accommodate TABOR requirements. TABOR does not apply to enterprise-funded jurisdictions or ones that pay for an EPC with cash or grants, therefore these entities could potentially utilize these grants.

APPENDIX I: LITERATURE REVIEW

Merrill Group conducted a literature review that identified numerous resources that focus on EPC and the benefits and barriers to aggregating, bundling, and/or pooling projects. In summary, while there are numerous resources that focus on EPC there has been very little research on how to successfully aggregate, bundle and/or pool projects. The types of resources covered in the literature review include websites, case studies, frameworks, and reports.

GENERAL RESOURCES AND WEBSITES

- **Advance Colorado** (http://www.advancecolorado.com/): The Office of Economic Development and International Trade website.
- **American College and University Presidents' Climate Commitment** (http://www.presidentsclimatecommitment.org/node/3103): Provides a best practices toolkit for EPC for Higher Education.
- **Colorado Department of Education** (http://www.cde.state.co.us/stateinfo/qggovtstatistics): List of State Government statistical information for Colorado. In addition, information on their BEST program.
- **Database of State Incentives for Renewables & Efficiency** (http://www.dsireusa.org/): A comprehensive source of information on incentives and policies that support renewables and energy efficiency in the United States.
- **Department of Energy** (http://energy.gov/eere/femp/energy-savings-performance-contracts): Various resources provided by the Department of Energy for federal, state, and local government projects.
- **Department of Energy: Accelerator Program** (http://www1.eere.energy.gov/buildings/betterbuildings/accelerators/performance.html): An overview of the Better Buildings Accelerator Program.
- **Energy Services Coalition** (http://www.energyservicescoalition.org/): The Energy Services Coalition is a national nonprofit composed of a network of experts from a wide range of organizations working together at the state and local level to increase energy efficiency and building upgrades through EPC.
- **Federal Energy Management Program's (FEMP) Energy Savings Performance Contract ENABLE Program** (http://energy.gov/eere/femp/espc-enable): The program provides a standardized and streamlined process for small, Federal facilities to install targeted, energy conservation measures in six months or less. Provides simplified contract templates.
- **National Association of Energy Service Companies (NAESCO)** (http://www.naesco.org/): NAESCO is a leading trade organization representing energy efficiency industry leaders.
- **National Conference of State Legislatures** (http://www.ncsl.org/research/energy/state-energy-savings-performance-contracting.aspx): Overview of enabling legislation for states to perform EPC.
- **QZABs: Qualified Zone Academy Bonds** (http://www.qzabs.com/): An overview on how to utilize QZABs which allow qualifying schools to borrow at little or no interest cost.
- **U.S. Department of Housing and Urban Development (HUD)** (http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/phecc/eperformance): A review of HUD's EPC program.

Case Studies, Reports, Papers, and Various Documents

Resources that Specifically Focus on Aggregating, Pooling, and Bundling Projects

- **The Alliance to Save Energy (1988)** ***Pooled Performance Contracting for Nonprofit Agencies*** (http://aceee.org/files/proceedings/1988/data/papers/1988_V7_012.pdf): An overview of a "pooled" EPC project for eight small nonprofit agencies in Pennsylvania.
- **Energie-Cities European Union (2004)** ***Public-Private Partnerships – Performance Contracting Guidelines for Municipalities*** (http://energy-cities.eu/IMG/pdf/performance_contracting_en.pdf): Resource provides general guidance on EPC for municipalities and discusses the development of project pools.
- **European Investment Bank (2014)** ***Municipal Energy Performance Contracting Initiative*** (http://www.eib.org/attachments/documents/elena_mepci_factsheet_en.pdf): Description of expectations for pooled EPC projects currently in-progress.
- **National Renewable Energy Laboratory (2013)** ***The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*** (http://energy.gov/sites/prod/files/2013/07/f2/53827_complete.pdf): Discusses an approach for pooling measurement and verification resources and jointly conducting an evaluation.
- **Penelope Bacchus (2002)** ***Pooling of Energy Contracting in Small Communities*** (http://www.procuraplus.org/fileadmin/template/projects/procurapls/files/CD-ROM/Case_Studies/Energy_performance_contracting_Steiermark_Austria.pdf): Project overview that demonstrates the feasibility and barriers of pooling several small municipal buildings under a single EPC.
- **Wilson Sonsini Goodrich and Rosati (2013)** ***Innovations and Opportunities in Energy Efficiency Finance*** (https://www.wsgr.com/publications/PDFsearch/WSGR-EE-Finance-White-Paper_13.pdf): A primer on financing for EPC; includes a discussion of financing for pooled or aggregated projects.

Resources that Specifically Focus on Supporting Projects in Small and Rural Areas

- **Colorado Energy Office (2005)** ***An Energy Performance Contracting Success Story: Turning Energy Savings into a Better Learning Environment*** *(http://cospl.coalliance.org/fedora/repository/co%3A2000/gov112l472008internet.pdf/):* A case story on a successfully implemented EPC for a small school district in Colorado.
- **European Commission (2015)** ***Energy Saving in Municipal Buildings in Small Communities in Rural Districts*** (http://ec.europa.eu/energy/intelligent/projects/en/projects/ensamb): Describes the lessons learned from implementing wide-scale energy efficiency programs in small communities.
- **National Institute of Building Sciences (date unknown)** ***Financing Small Commercial Building Energy Performance Upgrades: Challenges and Opportunities*** (https://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/CC/CFIRE_CommBldgFinance-Final.pdf): Discusses opportunity, challenges, and benefits of implementing energy performance upgrades on commercial buildings of 50,000 square feet or less.
- **Oregon Department of Energy (2008)** ***Energy Savings Performance Contract: Pendleton Schools 'round up' energy savings*** (http://www.oregon.gov/energy/CONS/school/docs/PSD_ESPC.pdf): A case story on a successfully implemented EPC for a small school district in Oregon.

State Programs That Have Aggregated, Pooled, and/or Bundled Projects

The following are links to state programs that are currently working on aggregating, pooling, and/or bundling projects or have had success completing small projects. More information on specific programs can be found in the Appendix B.

- **Arizona** (http://www.azenergy.gov/ESPC.aspx): Arizona created the School Energy Efficiency Program, which is administered in conjunction with the Arizona School Facility Board, to support K12 schools energy efficiency upgrades. The Program provides grants covering up to 30 percent of project costs.
- **Colorado** (http://www.colorado.gov/cs/Satellite/GovEnergyOffice/CBON/1251599983018): Colorado's program provides some examples of successfully aggregated, pooled and bundled projects and has also successfully completed projects in rural and small communities.
- **Kansas** (http://www.kcc.state.ks.us/energy/fcip/): Kansas, through its Facilities Conservation Improvement Program, initiated a "bundling program" under an earlier administration ("bundled" follows the definition in this report of "pooled"). The program approached the major public entities in a region and established a Memorandum of Understanding between pooled entities to issue a joint RFP to select a common ESCO.
- **Kentucky** (http://energy.ky.gov/Pages/commercial.aspx): Has successfully completed smaller projects. They have not bundled or aggregated a project.
- **Massachusetts** (http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/ems.html): The Massachusetts program has successfully pooled regional projects to create stronger incentives for ESCOs to work with smaller institutions.
- **Minnesota** (http://mn.gov/commerce/energy/topics/financial/Energy-Savings-Program/Performance-Contracts/): Minnesota developed a contract structure such that the state holds a master contract and state or local jurisdictions sign work orders under the master contract to complete their individual projects.
- **Montana** (http://deq.mt.gov/Energy/conservation/energyperfcontracting.mcpx): Has successfully completed smaller projects. They have not bundled or aggregated a project.
- **Nevada** (http://energy.nv.gov/Programs/Public_Facilities_Retrofit_Grant/): Nevada recently completed a joint RFPs for multiple jurisdictions that allows an ESCO to respond to one RFP but enter into separate EPCs for construction.
- **New Mexico** (http://www.emnrd.state.nm.us/ECMD/CleanEnergyPerformanceFinancing/cleanenergyperformancefinancing.html): In New Mexico, a regional Council of Governments (COG) took the initiative to aggregate three to four communities in a joint procurement after seeking assistance from the state energy office. After selecting a common ESCO the COG executed a master contract and each entity signed a task order to complete projects totaling $2.4 million.
- **North Carolina** (http://portal.ncdenr.org/web/deao/ea/utility-savings-initiative/performance-contracting): North Carolina has successfully completed small projects. Note some of the reason that small projects are possible is County government pays all utility bills for all public sector entities within their jurisdiction. Currently attempting first aggregated project.
- **Rhode Island, Washington County Regional Planning Council** (http://wcrpc.org): Rhode Island has successfully pooled projects at a regional level.
- **Washington** (http://www.des.wa.gov/services/facilities/Energy/ESPC/Pages/default.aspx): Washington State has successfully completed small projects since its inception in 1984.

Federal Programs That Have Aggregated, Pooled, and/or Bundled Projects

- **HUD (2005)** ***HUD Field Office Review Procedure, Energy Performance Contracting*** (http://www.hud.gov/local/shared/working/r9/cpd/guidelines.pdf): Protocol for reviewing applications and monitoring the implementation of EPC, including an overview of bond pools.
- **U.S. Department of Energy (2003)** ***Super Energy Savings Performance Contracts*** (http://www.nrel.gov/docs/fy03osti/34312.pdf): Streamlined Super Energy Savings Performance Contracts (Super ESPCs) offered by the U.S. Department of Energy to make it easier for agencies to finance energy efficiency improvements in Federal buildings.

Resources that Specifically Focus on Financing

- **Center for American Progress (2011)** ***Social Impact Bonds: A promising new financing model to accelerate social innovation and improve government performance*** (https://cdn.americanprogress.org/wp-content/uploads/issues/2011/02/pdf/social_impact_bonds.pdf): Discusses the model of social impact bonds and its benefits and challenges.
- **Clinton Foundation (2009)** ***Energy Performance Contracting Financing Options*** (http://www2.presidentsclimatecommitment.org/documents/ccitoolkit/Energy_Performance_Contracting_Financing_Options.pdf): An overview of various financing options for completing an EPC in the private and/or public sector.
- **Enterprise Community Partners, Inc.** ***Pay for Success: Building on 25 Years of Experience with the Low Income Housing Tax Credit*** (http://www.frbsf.org/community-development/files/pay-for-success-building-25-years-experience-low-income-housing-tax-credit.pdf): Paper focuses on a financial mechanism similar to EPC used in low-income multifamily buildings.
- **Federal Reserve Bank of San Francisco (date unknown)** ***Pay for Success: Building on 25 Years of Experience with Low Income Housing Tax Credit*** (http://www.frbsf.org/community-development/files/pay-for-success-building-25-years-experience-low-income-housing-tax-credit.pdf): Discusses the lessons learned and successes from the low income housing tax credit and uses this as an example for other financial mechanisms that could support projects that bring about social good.
- **The Efficiency Network (2015)** ***Funding option for tax-exempt or nonprofit organizations in Pennsylvania*** (https://tensaves.com/an-approved-service-provider-explains-the-pennsef-program/): Description of an investment option to fund energy improvement projects in municipal and nonprofit organizations, includes approach to aggregated and pooled projects.

Resources that Specifically Focus on Contracting Documents

- **Institute for Building Efficiency (2010)** ***Energy Performance Contracting in the European Union: Creating Common "Model" Definitions, Processes and Contracts*** (http://www.institutebe.com/InstituteBE/media/Library/Resources/Existing%20Building%20Retrofits/Issue-Brief---Energy-Performance-Contracting-in-the-EU---Part-2.pdf): The paper focuses on definitions, procurement processes, and contract document templates for EPC in the European Union.

Additional Resources

- **Colorado Energy Office (2015)** ***Colorado's Venture into the Private Sector with Energy Performance Contracting: Considerations for a State Energy Office Program Offering*** (http://www.colorado.gov/cs/Satellite?c=Document_C&childpagename=GovEnergyOffice%2FDocument_C

%2FCBONAddLinkView&cid=1251662436264&pagename=CBONWrapper): Describes the lessons learned engaging with 32 companies; market benefits and barriers; ESCO and private sector client interviews; and considerations for a permanent state energy office program offering.

- **Colorado Governor's Energy Office (Colorado Energy Office) (2010)** ***2010 Colorado Utilities Report*** (http://www.colorado.gov/cs/Satellite?c=Document_C&childpagename=GovEnergyOffice%2FDocument_C%2FCBONAddLinkView&cid=1251611267808&pagename=CBONWrapperhttp://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename=%222010+Utility+Report.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&bl) Provides a general description of Colorado's complex and unique electric and gas utility marketplace and outlines the generation resources, operating data, and governance structure of Colorado's 65 electric and gas utilities.
- **Lawrence Berkeley National Laboratory (2013)** ***Current Size and Remaining Market Potential of the U.S. Energy Service Coalition Company Industry*** (http://emp.lbl.gov/sites/all/files/lbnl-6300e_0.pdf): Provides an overview of market size, growth projections and industry trends in the U.S. ESCO industry.
- **Pacific Northwest National Laboratory (2015)** ***The Energy Performance Contracting Toolkit: Existing and Potential Resources for EPC Projects in China and the United States*** (http://www.globalchange.umd.edu/data/epc/EPC_Toolkit_final0429.pdf): Provides a quick overview of best EPC practices.

APPENDIX J: MORE INFORMATION ON INTERVIEWEES

A total of 36 telephone interviews and 2 in-person interviews were conducted with a variety of individuals whose organizations have direct experience working with small and rural communities and/or have direct experience working with legislation and financing that supports small and rural communities.

Table 31. Interview List

Rural Partner and/or Rural Representative	Rural Community	ESCO	Financing Agency
1. Becker Stowe Partners LLC 2. Brett Johnson ((Formerly with the State Treasurers Office)) 3. Clean Energy Economy for the Region (CLEER) 4. Colorado Department of Education (CDE) 5. CDE's Rural Education Council 6. Colorado Municipal League 7. Community Office for Resource Efficiency (CORE) 8. Consensus 9. Department of Local Affairs (DOLA) 10. EcoAction Partners 11. Educational Institute of Cooperative Services 12. Kansas State Energy Office 13. Massachusetts State Energy Office 14. New Mexico State Energy Office 15. Nevada Energy Office 16. SGM, Inc. 17. Special District Association 18. State of Colorado Attorney General's Office 19. Trident Energy Services, Inc.	20. Chaffee County 21. Montezuma-Cortez School District Re-1 22. Rio Grande County 23. Town of Limon 24. Town of Ouray 25. Eaton Re-1 School District	26. 360 Energy Engineers 27. Ameresco 28. Apollo Solutions Group 29. Chevron 30. Honeywell 31. Iconergy 32. OpTerra	33. AAIG 34. Alpine Bank 35. El Pomar Foundation 36. David C Smith 37. Saulsbury Hill Financial, LLC 38. San Luis Valley Federal Bank

The CEO and the Merrill Group team chose these organizations because they possessed one or more of the following traits:

- Expert understanding of EPC (including contracting requirements) and its implementation in rural communities.
- Expert understanding of rural community needs.
- Experience with an attempted or completed aggregated, pooled, or bundled EPC.
- Potential outreach partner.
- Active stakeholder in senate bills that support EPC, such as Senate Bill 14-186 and Senate Bill 252.
- Potential financing or funding source and/or expert understanding of the financing process.

A summary of these traits by organization is presented below.

Table 32. Summary of Interviewee Expertise

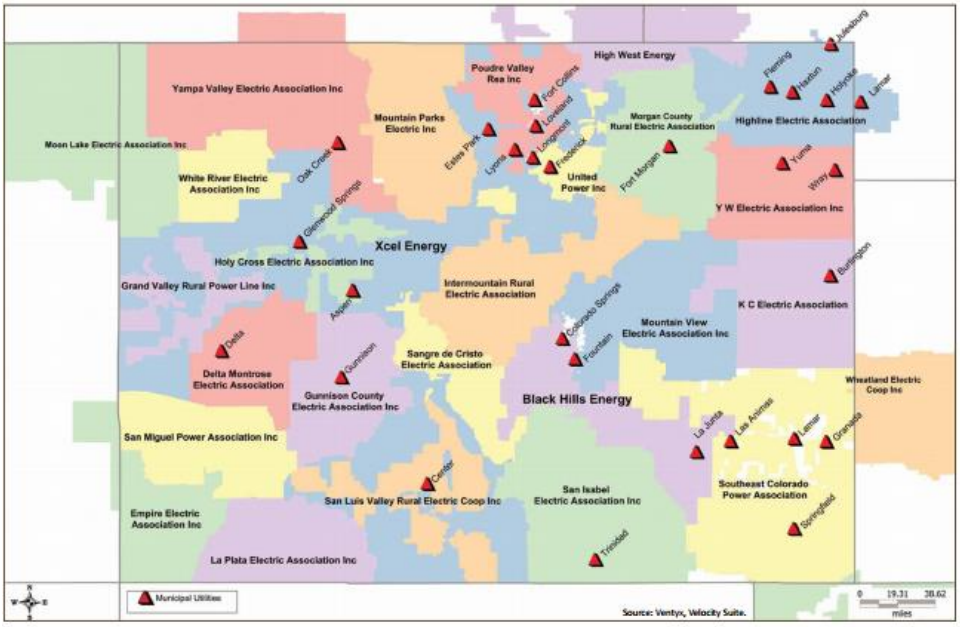
	Expert understanding of EPC in rural communities	Expert understanding of rural community needs	Experience with an attempted or completed aggregated, pooled, or bundled EPC	Potential outreach partner	Active stakeholder in senate bills	Potential financing or funding source/expert understanding of financing process
Rural Partner and/or Rural Representative						
Becker Stowe Partners LLC	✓	✓				✓
Brett Johnson (formerly with State Treasures Office)	✓					✓
CLEER	✓	✓	✓	✓		
CDE		✓		✓		
CDE's Rural Education Council	✓	✓		✓		
Colorado Municipal League		✓		✓		
CORE	✓	✓		✓		
Consensus	✓	✓				
David C Smith						✓
DOLA				✓	✓	✓
EcoAction Partners	✓	✓	✓	✓		
Educational Institute of Cooperative Services	✓			✓		
Kansas State Energy Office	✓	✓	✓			
Massachusetts State Energy Office	✓	✓	✓			
Nevada Energy Office	✓	✓	✓			
New Mexico State Energy Office	✓	✓	✓			
SGM, Inc.	✓	✓	✓			
Special District Association		✓		✓	✓	
State of Colorado Attorney General's Office	✓					
Trident Energy Services, Inc.	✓	✓				
Rural Community						
Chaffee County	✓	✓	✓	✓		
Eaton Re-1 School District	✓	✓		✓		
Montezuma-Cortez SD Re-1		✓				
Rio Grande County	✓	✓		✓		
Town of Limon	✓	✓		✓		
Town of Ouray	✓	✓	✓			
ESCO						
360 Energy Engineers	✓	✓	✓			
Ameresco	✓	✓	✓			
Apollo Solutions Group	✓	✓	✓			
Chevron	✓	✓	✓			
Honeywell	✓	✓				
Iconergy	✓	✓				
OpTerra	✓	✓	✓			
Financing Agency						
AAIG	✓				✓	✓
Alpine Bank						✓
El Pomar Foundation						✓
Saulsbury Hill Financial, LLC	✓					✓
San Luis Valley Federal Bank						✓

APPENDIX K: REGIONAL OPPORTUNITIES AND CONSIDERATIONS

ENERGY AND WATER COSTS

As of 2010, Colorado had 65 electric and natural gas utilities. Fifty-one of these utilities provided electric service only, six provide electric and gas service, and eight provide gas service only. Figure 4 shows Colorado's Electric Utility Service Territories as of 2010.[16]

Figure 4 Colorado's Electric Utility Service Territories as of 2010



The pricing for electricity and natural gas varies drastically by region. For example, as shown in Table 33 the base rate for commercial electricity ranged from $0.0225 per kWh to $0.1636 per kWh and the gas base rate ranged from $0.0018 per therm to $0.77 per therm in 2010.

Table 33. Electricity and Gas Pricing

Electricity & Gas Price Data	Minimum	Maximum	Average
Electric Base Rates ($/kWh)			
Residential	$0.0458	$0.1710	$0.0942
Commercial	$0.0225	$0.1636	$0.0885
Industrial	$0.0046	$0.1370	$0.0631
Irrigation	$0.0068	$0.1529	$0.0852
Gas Base Rates ($/therm)			
Residential	$0.0940	$0.7700	$0.4702
Commercial	$0.1309	$0.7700	$0.4680
Industrial	$0.0018	$0.7200	$0.4127
Irrigation	$0.0800	$0.4800	$0.2226

Source: Colorado utilities and Navigant Consulting analysis
Note: Pricing generally consists of the base rate plus other charges. Total pricing (after factoring in demand charges and other variable fees) is often higher than the base rates shown in the figure. Relative pricing across sectors may be different than what is shown here as a result.

[16] *2010 Colorado Utilities Report* (2010) Navigant Research for the Governors Energy Office. http://www.colorado.gov/cs/Satellite?c=Document_C&childpagename=GovEnergyOffice%2FDocument_C%2FCBONAddLinkView&cid=1251611267808&pagename=CBONWrapper

In regions where the energy prices are higher and/or the costs are expected to rise are potentially good markets for the CEO to target. An analysis of the pricing by region was not part of the scope and therefore is not provided in the report.

Water costs are also rising drastically in parts of Colorado due to droughts and the need for infrastructure upgrades. For example, Colorado Springs residents are expected to experience very high rate increases for water over the next five years.[17] Many rural and small communities are especially vulnerable to increasing water costs because they have to cover large maintenance costs with a smaller tax base.

Population Changes

One of the largest issues affecting rural and small communities throughout Colorado is the decreasing population. The shrinking population reduces the tax base on which the public sector relies on. This provides both an opportunity and challenge for completing an EPC. With a decreasing tax base many of these communities will need help financing capital improvements. However a shrinking tax base makes financing more risky for lenders especially with a timeline of 10-20 years. Lenders are especially wary of lending to shrinking school districts that rely on federal and state per pupil funding.

Table 34 provides an overview of Counties populations (as of 2010) and changes in population between 2000-2010 and 2010-2013. Overall Colorado has experienced a notable population growth of 17% between 2000 and 2010 and 4% between 2010 and 2013; however as the table shows there are large discrepancies in growth by County. For example, Douglas County expanded by 62% between 2000 and 2010, compared to Cheyenne County whose population decreased by 18% during that time. Figure 5 provides an overview of Colorado population changes between 2011 and 2012.

Table 34. Population Change by County[18]

County	Total County Population in 2010	Population Change between 2000-2010	Population Change between 2010-2013
Adams	441,603	21%	6%
Alamosa	15,445	3%	2%
Arapahoe	572,003	17%	6%
Archuleta	12,084	22%	1%
Baca	3,788	-16%	-3%
Bent	6,499	8%	-13%
Boulder	294,567	1%	5%
Broomfield	55,889	0%	6%
Chaffee	17,809	10%	4%
Cheyenne	1,836	-18%	3%
Clear Creek	9,088	-3%	-1%
Conejos	8,256	-2%	0%
Costilla	3,524	-4%	0%

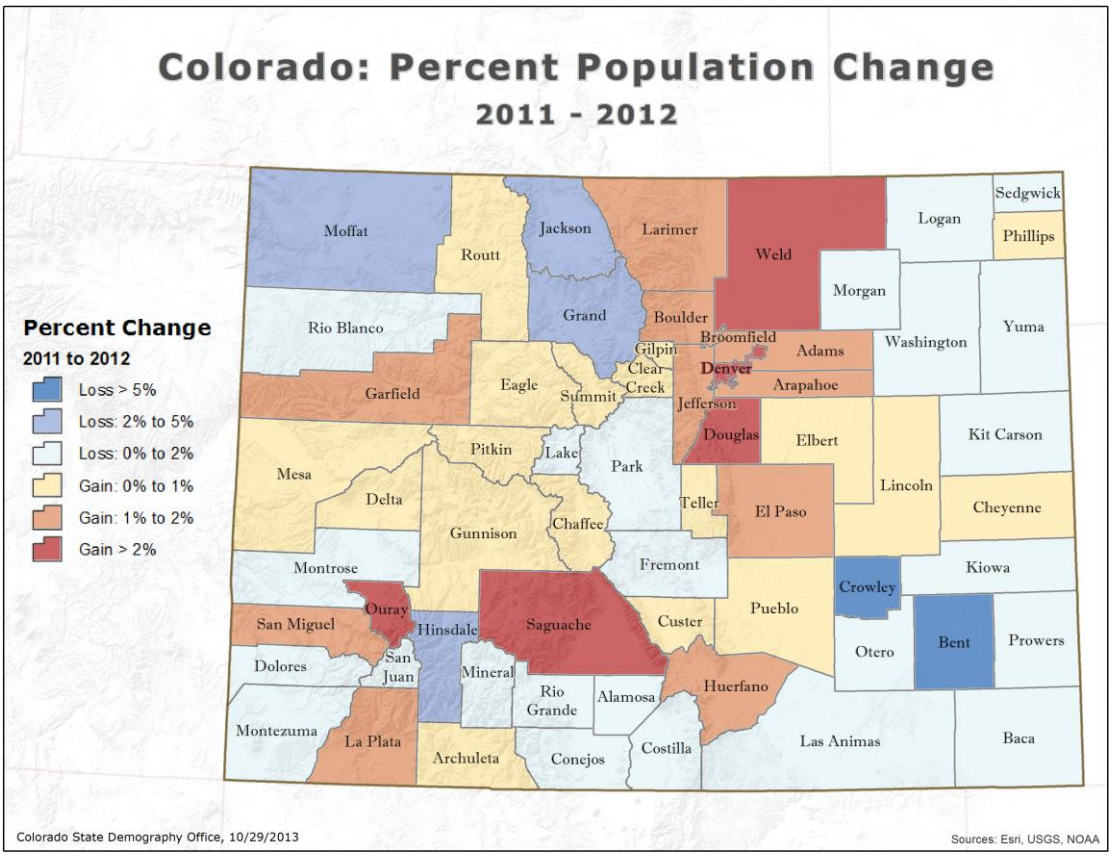
[17] *Rate hike likely for Colorado Springs Utilities customers, along with staff cuts* (2014) Monica Mendoza. http://gazette.com/rate-hike-likely-for-colorado-springs-utilities-customers-along-with-staff-cuts/article/1535979

[18] http://dola.colorado.gov/demog-cms/content/census-data

County	Total County Population in 2010	Population Change between 2000-2010	Population Change between 2010-2013
Crowley	5,823	6%	-9%
Custer	4,255	21%	0%
Delta	30,952	11%	-1%
Denver	600,158	8%	8%
Dolores	2,064	12%	-2%
Douglas	285,465	62%	7%
Eagle	52,197	25%	1%
Elbert	622,263	16%	3%
El Paso	23,086	20%	5%
Fremont	46,824	1%	-1%
Garfield	56,389	29%	2%
Gilpin	5,441	14%	2%
Grand	14,843	19%	-3%
Gunnison	15,324	10%	1%
Hinsdale	843	7%	-4%
Huerfano	6,711	-15%	-2%
Jackson	1,394	-12%	-1%
Jefferson	534,543	1%	3%
Kiowa	1,398	-14%	2%
Kit Carson	8,270	3%	-2%
Lake	51,334	-6%	1%
La Plata	7,310	17%	4%
Larimer	299,630	19%	5%
Las Animas	15,507	2%	-6%
Lincoln	5,467	-10%	-1%
Logan	22,709	11%	-2%
Mesa	146,723	26%	1%
Mineral	712	-14%	2%
Moffat	13,795	5%	-5%
Montezuma	25,535	7%	0%
Montrose	41,276	23%	-1%
Morgan	28,159	4%	1%
Otero	18,831	-7%	-1%
Ouray	4,436	19%	2%
Park	16,206	12%	-1%
Phillips	4,442	-1%	-2%
Pitkin	17,148	15%	1%
Prowers	12,551	-13%	-2%
Pueblo	159,063	12%	1%
Rio Blanco	6,666	11%	2%
Rio Grande	11,982	-3%	-2%
Routt	23,509	19%	0%

County	Total County Population in 2010	Population Change between 2000-2010	Population Change between 2010-2013
Saguache	6,108	3%	1%
San Juan	699	25%	-2%
San Miguel	7,359	12%	4%
Sedgwick	2,379	-13%	0%
Summit	27,994	19%	2%
Teller	23,350	14%	-1%
Washington	4,814	-2%	0%
Weld	252,825	40%	6%
Yuma	10,043	2%	1%
State of Colorado	5,029,196	17%	4%

Figure 5. Percent Population Change between 2011 and 2012[19]



[19] Department of Local Affairs (2013) http://dola.colorado.gov/cms-base/sites/dola.colorado.gov.gis-cms/files/projects/thematic/Population/PctChg11to12.png