COLORADO'S VENTURE into the PRIVATE SECTOR with ENERGY PERFORMANCE CONTRACTING:

CONSIDERATIONS FOR A STATE ENERGY OFFICE PROGRAM OFFERING

FINAL REPORT TO THE U.S. DEPARTMENT OF ENERGY

The Colorado Energy Office
Jeanna M. Paluzzi
Energy Performance Contracting Program Manager
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FOR FURTHER INFORMATION ABOUT THE COLORADO ENERGY PERFORMANCE CONTRACTING PROGRAM, PLEASE CONTACT:

Jeanna M. Paluzzi
Energy Performance Contracting Program Manager

COLORADO
Energy Office

P 303.866.3464 | **F** 303.866.2930
1580 Logan Street, Suite 100, Denver CO 80203
jeanna.paluzzi@state.co.us
www.colorado.gov/energy

COLORADO
Energy Office
Energy Performance Contracting

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SECTION 1 BACKGROUND

Colorado's success with EPC in the public sector

The Colorado Energy Office's (CEO) Energy Performance Contracting (EPC) Program has provided public jurisdictions a tool for financing energy and water efficiency improvements for more than 20 years. As of June, 2014,142 jurisdictions have leveraged close to $29 million in guaranteed energy savings to finance 182 projects, investing $447 million in public schools and university buildings, libraries, community centers, county buildings, hospitals and health clinics, veterans housing, prisons, and other government facilities. These numbers placed Colorado No. 3 nationally in total investments and No. 5 in investments per capita.

An EPC project can be found in communities across 75% of Colorado's counties. Two-thirds of Colorado's completed projects serve communities outside the Front Range. Project size ranges from $167,000 to $10.6 million.

Key elements of Colorado's success with EPC in the public sector include:

- Enabling legislation, which defines key budgetary, financing, and measurement and verification requirements.
- State energy office program support, combined with collaborative relationships with the Colorado Offices of the State Architect, Attorney General, State Treasurer, and State Controller.
- A comprehensive package of standardized contracts, protocols, guidance documents and other documents that support the life cycle of an EPC project. All are available on the web. Colorado contracts were one basis for developing DOE's model contract offering in 2014.
- Pre-qualified energy service companies (ESCOs) selected for their depth and breadth of services and organizational strength. Their contract with CEO requires adherence to engineering licensing requirements, industry standards, statutory and regulatory requirements, and CEO's Standards for Success.
- Free third-party advice and technical assistance throughout a project's lifecycle, for client jurisdictions signing a Memorandum of Understanding (MOU) with CEO.
- An engaged open financial market interested in financing EPC projects.
- An engaged Colorado Chapter, Energy Services Coalition.
- Programmatic standards for success, designed to ensure every client is comfortable with each decision made during a project lifecycle.

Two recent national reports

From a national perspective, two recent reports provide valuable information about energy performance contracting's ability to drive energy efficiency in the United States.

Bloomberg Finance LP, in partnership with The Business Council for Sustainable Energy, issued in February, 2014 the *2014 Sustainable Energy in America Factbook*. *Factbook* Figures 118 and 119 are copied here.

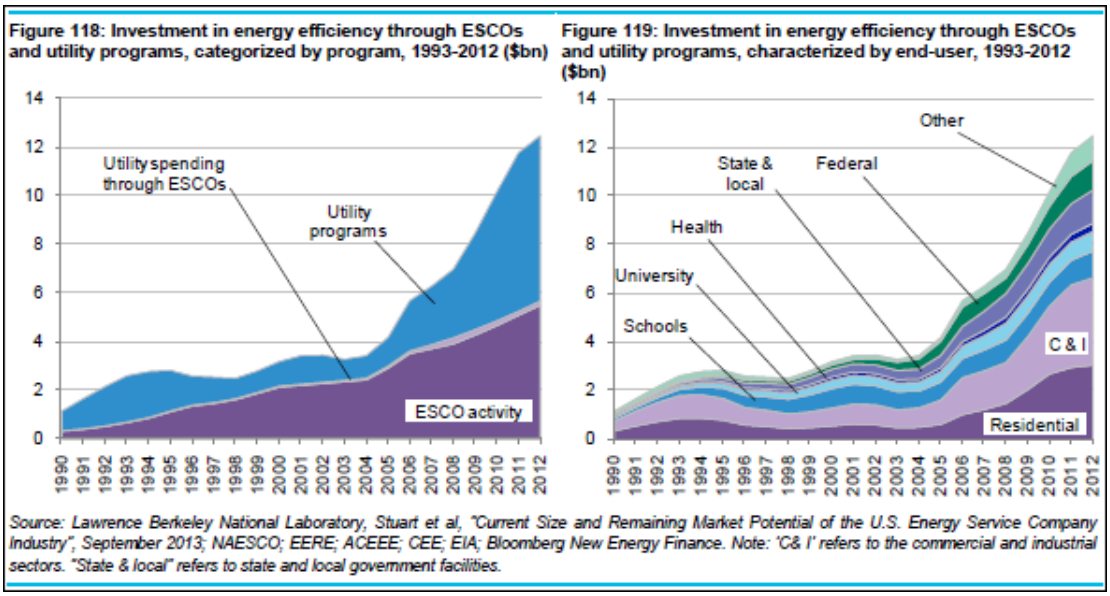

Figure 118 illustrates how EPC's contribution now rivals that of utility demand side management (DSM) incentive programs to total investments in energy efficiency in the United States. The report indicates that the investments in the municipal, university, schools and hospitals (MUSH) markets, illustrated in Figure 119, come through ESCOs, while all residential energy efficiency investment and the bulk of formal investment into commercial and industrial energy efficiency occurs through utility DSM programs.

Lawrence Berkeley National Laboratory and the National Association of Energy Service Companies (NAESCO) collaborated to produce the September, 2013 report LBNL-6300E, *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry*. Table ES-1 illustrates the ESCO survey analysis indicated relatively low market penetration (<10%) in private commercial and health/hospital markets since 2003.

Table ES- 1. Median ESCO market penetration estimates: % of total market floor area addressed by performance-based contracts since 2003

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%

The LBNL/NAESCO report also found that there is considerable ESCO opportunity in all market segments. The three markets with the largest estimated remaining market potential for EPC investments are:

- Private commercial building sector ($14-34 billion)
- K-12 schools ($16-29 billion)
- Health and hospitals ($15-26 billion)

The pilot program team had the opportunity to speak with NAESCO president Don Gilligan about the LBNL/NAESCO study. Gilligan noted that the EPC projects completed in the private sector were primarily lighting and controls-only retrofits, rather than the more comprehensive retrofits typical of EPC in Colorado's public sector.

Colorado's venture into the private sector with a pilot program

The market potential in the private sector presents an interesting challenge: How can a successful state-sponsored EPC program, a proven tool for driving comprehensive energy efficiency in the public sector, make a similar impact in the private sector? When presented with the EPC program model, how do private sector facility owners respond?

2011 DOE COMPETITIVE AWARD

In FY11 the U.S. Department of Energy (DOE) issued Funding Opportunity Announcement (FOA) DE- FOA-0000533. The objectives of FOA Area of Interest 1 were to increase the penetration of existing whole-building retrofit activities, and establish a strong retrofit market in commercial buildings by addressing policy, regulatory, and other barriers that limit or preclude such investments.

Colorado submitted a proposal to offer the state's public sector EPC program to the private sector, with a particular interest in the health care/hospital market. Colorado proposed that:

- All companies accepted into the pilot program would be provided a CEO project consultant's free advice and technical assistance during their EPC project experience.

- Each company would select a pre-qualified ESCO with which to work through a technical energy audit (TEA), which in other states is referred to as an investment grade audit. Then each company would consider a project proposal based upon TEA findings, and determine whether to proceed into an energy performance contract.

DOE approved Colorado's proposal and funded the pilot program through a Cooperative Agreement. That prompted a close collaboration between the DOE, the CEO, and the CEO's sub-recipients in achieving the pilot program's objectives.

The pilot program did include one significant departure from CEO's traditional EPC program: an incentive for private sector participation in the form of a reduced fee for a Technical Energy Audit. Upon acceptance into the pilot program, each company was offered a 75% cost share, up to a maximum of $25,000 per company.

PILOT PROGRAM FUNDING SOURCES

The DOE Competitive Award underwrote contractor expenses and the cost share incentive, as follows:

- CEO contracted Nexant, Inc. to provide advice and technical assistance to companies demonstrating interest in the pilot program. Nexant also provided technical assistance to CEO and DOE in dissecting private sector reactions to EPC and its component parts.
- CEO contracted the Southwest Energy Efficiency Project (SWEEP) to (1) research and report on utility incentive programs of potential interest to private sector commercial building owners early in the pilot program, (2) survey a cross-section of pre-qualified ESCOs regarding interest and perspectives on the potential for private sector uptake of EPC early in the pilot program, and (3) survey participating companies about their EPC experience late in the pilot program.
- The pilot program considered a total of 32 companies for participation in the pilot program. CEO worked with 27 companies with promising prospects for an EPC project. Ultimately, CEO issued purchase orders to 13 companies that demonstrated facility need, motivated staff, and an ability to mobilize internal resources necessary for an EPC project. The purchase orders allowed the selected companies to be partially reimbursed for TEA fees. Upon receipt of a finalized TEA report, and paperwork documenting payment to their selected ESCO for TEA services, the companies were reimbursed a previously agreed-upon amount of money, equivalent to 75% of the TEA fee, up to $25,000.

Two non-federal sources of funds were leveraged in managing the pilot program:

- The Colorado Clean and Renewable Fund paid for CEO staff expenses. House Bill 12-1315 established this fund in 2012 to support CEO's work in advancing energy efficiency and renewable energy throughout the state.

- The 13 participating companies paid for the 25% of their TEA costs not covered by the incentive payment.

The following table presents the original and actual pilot program budgets:

Source of funds	Original budget	Actual expended	Other - detail	Net change
U.S. DOE Competitive Award	$ 610,188	$ 543,634		- 11%
Other	$ 162,384	$ 339,362		+ 209%
Colorado Clean and Renewable Energy Fund			$ 141,863	
Participating company TEA cost-share			$ 197,499	
Total	**$ 772,572**	**$ 882,996**		**+ 14%**

PILOT PROGRAM TEAM

CEO EPC Program Managers and regional representatives were the key CEO staff for this pilot program. Conor Merrigan submitted the program proposal. Governor's Energy Office regional representatives managed the early marketing efforts. Hillary Dobos facilitated the interim program activity that escalated program uptake. Jeanna Paluzzi managed the final year of pilot program activity, including the last rounds of applications, TEA fee reimbursement and analyses of company reactions to EPC as well as the Colorado EPC program and its component parts.

CEO wishes to express gratitude to several people who made significant contributions to the success of this venture into the private sector with EPC:

★ DOE Project Officer John Winkel provided commitment, continuity, and strategic thinking; enabled critical networking connections with the Energy Services Coalition national conference planning committee and the Rocky Mountain Association of Energy Engineers; and otherwise provided substantial project support over the life cycle of this pilot program.
★ Brian Carlin, Senior Project Engineer at Nexant, provided continuity, advice and technical assistance to all companies expressing interest in the pilot program, developed and documented the lessons learned from company behavior, and greatly contributed to the final dissection of company behavior and EPC and its components.
★ Maureen Quaid, Senior Research Associate at SWEEP (Southwest Energy Efficiency Project) designed and conducted the ESCO and company surveys and identified other important information resources.
★ The EPC project champions within each participating company.
★ The ESCOs who ventured into this new territory and brought forth clients to the pilot program, and the anonymous pre-qualified ESCOs who agreed to be interviewed about their historical experience with EPC in the private sector, outside of this pilot project.

SECTION 2 REPORT ORGANIZATION

The purpose of DOE's Competitive Award to Colorado was to explore barriers to accelerating EPC uptake in the private sector.

Appendix A is Nexant's final report, describing company projects and summarizing market barriers and benefits and considerations for permanent program design. Specific identifying company data is redacted, for private sector competitiveness reasons.

Appendix B provides all three of SWEEP's reports, summarizing utility incentive programs, a snapshot of ESCO perspectives on private EPC market potential, and company feedback on their experience with the pilot program. Specific identifying company data again is redacted, for private sector competitiveness reasons.

The main report is organized from a state energy office EPC Program Manager's perspective. The Colorado EPC Program Manager is conducting due diligence in permanent program design and preparing a proposal to her office leadership. As such, Colorado's venture into the private sector is documented within a framework of due diligence and program design, as follows:

There are four key elements to the success of Colorado's EPC Program in driving energy efficiency in the public sector. Section 3 describes private sector response to those key elements:

- Pre-qualified energy service companies (ESCOs)
- Standardized program documents
- CEO's third-party advice and technical assistance
- Open financial market support

There are five defined phases to energy performance contracting. Section 4 describes private sector dynamics in these five steps:

1. Introductions and approval to proceed
2. Secondary ESCO selection process
3. Technical Energy Audit and project proposal
4. Project funding, EPC execution, and construction
5. Measurement and verification of guaranteed savings

Other states offer private sector energy efficiency program services in various ways. Section 5 describes a few of those programs.

Several interesting public, private, and nonprofit initiatives are developing and maturing and affecting private sector interest in energy efficiency. Section 6 describes the opportunity each presents.

Any manager proposing a major addition to a Colorado Energy Office program first will diligently research four critical elements of program design. Section 7 describes the four critical elements:

- The state's role in addressing a market failure
- Legislative or regulatory basis
- Funding sources
- Staffing needs

There are three important elements to a successful program launch. Section 8 describes considerations for all three:

- An advisory group
- Collateral material
- Marketing plan

Section 9 provides concluding remarks.

SECTION 3 PRIVATE SECTOR RESPONSE TO KEY ELEMENTS OF THE COLORADO EPC PROGRAM

There are four key elements to the success of Colorado's EPC Program in driving energy efficiency in the public sector:

- Pre-qualified ESCOs
- Standardized program documents
- CEO's third-party advice and technical assistance

This section describes private sector response to those key elements:

3.1 Pre-qualified ESCOs

Colorado seeks comprehensive energy and water efficiency improvements to public facilities through EPC, not just the lighting and controls-only retrofits noted in the LBNL/NAESCO study for the majority of private sector market activity to date. As such, Colorado solicits applications and selects ESCOs with a strong organizational capacity that can deliver a depth and breadth of services to public jurisdiction clients. The selected ESCOs enter into a non-monetary base contract with CEO. The base contract is annually renewable for up to five years. While Colorado has designed a five-year cycle into its ESCO Base Contracts, it has offered solicitations in off-cycle years.

The ESCO Base Contract is an important tool for ensuring adherence to professional engineering licensing requirements, industry standards, statutory and regulatory requirements, and Colorado's Standards for Success. The contract also identifies a standardized TEA pricing table, which drives competition for a contract award based on qualifications and fit, not pricing. Each ESCO annually identifies the maximum profit percentages it will incorporate into project budgets. See the *Cost Estimate Tool* on CEO's webpage for more information. There are also two annual requirements that must be met to be considered for annual ESCO Base Contract renewal: a demonstration of reasonable participation in the Colorado market, and project metrics reporting.

Feedback from public sector EPC clients indicates general appreciation for ESCO pre-qualification. The state's "Good Housekeeping Seal of Approval" afforded pre-qualified ESCOs lends credibility and a sense of security to both the ESCO and the EPC program.

Colorado's venture into the private sector found the same reaction from companies to ESCO pre-qualification and CEO program backing. Two of the three companies interviewed by SWEEP indicated that CEO backing legitimized ESCO service offerings. See Appendix B SWEEP

Work Products Report 3 for more details. Given the private sector's lack of familiarity with EPC, one influential role the state can continue to play in a permanent program is lending credibility to both EPC and the ESCOs that offer it.

KEEN INTEREST IN CONVERSION RATES

Some ESCOs that do well in the public sector offer only EPC services. Most ESCO business models reflect a strong interest in converting TEA contracts and reports into executed EPCs; that is their definition of successful client relationship-building. As one anonymously interviewed ESCO representative said, "We are not in the business to do audits. We are in the business to implement projects."

This conversion rate is quite high in the public sector, for several reasons:

- Public jurisdictions have limited funding alternatives. This leads to long-deferred maintenance.
- The long-term hold on public facilities allows for consideration of long-term financing arrangements. EPC enabling legislation caps financing periods at the cost-weighted average useful lifetime of equipment, up to a maximum 25 years. Typically Colorado public jurisdiction finance contract periods range from 12 to 15 years.
- Public jurisdictions have limited funding alternatives. The lease-purchase and annual renewal features designed into Colorado's standard EPC project financing contract comply with TABOR[1] restrictions on multi-year contracts.
- While the number of Certified Energy Managers employed by Colorado's nearly 2,600 public jurisdictions is increasing, energy management staffing may not be readily available. As such, the technical capacity offered by an ESCO is often attractive.
- Decision-making lines of authority are fairly distinct, visible, and consistent between public jurisdictions. Budget, procurement and contract decisions are made by a board, commission, or council.

Colorado's venture into the private sector found ESCO interest in conversion rates just as strong. However, ESCOs engaged in the pilot program adapted their public sector definition of successful client relationship. Flexible and nimble participating ESCOs found that a business model that provides TEAs, EPC and a multitude of other energy management services positions them well for engaging private sector clients.

The flexibility incorporated into the successful private sector ESCO business model is driven by barriers erected by private sector company dynamics. TEA conversion to EPC is more challenging in this sector for several reasons:

[1] Taxpayer Bill of Rights, Article X, Section 20, Colorado Constitution, in effect December 31, 1992 restricts revenues for all levels of government.

- The term of property hold varies widely.
- A split incentive for energy and water efficiency investments often exists in leased buildings.
- The private sector is reticent about project financing appearing on company balance sheets.
- While private sector companies have no regulatory hurdle against multi-year project financing, there may be internal hurdles for the approval of a comprehensive,multi-year project proposal:
    - Layers of corporate decision-making
    - An annual budget cycle, which makes timing of budget requests critical to project execution
    - An annual capital budget cycle, which may not accommodate multi-year projects without phasing the project
    - Annual capital budget decision-makers, who may or may not be the same people who approve the operating budget
    - Often private sector clients viewed the TEA as a "road map" of the coming three to five years. If an ESCO is too closely married to the idea of whole project implementation or nothing at all, then many private sector clients may walk away from their ESCO and self-implement the project as their budget cycle allows.
- Companies may be comfortable working with existing contractors with existing maintenance contracts for specific mechanical, electrical, and plumbing (MEP) services. As such, a company may not be interested in the competitive bidding process typical of a public sector EPC project.
- Companies may be comfortable with the traditional design/bid/build model.
- Companies may look for energy management services separate from the traditional EPC model.

For more specific information, see lessons learned from each company in Appendix A Nexant's final report, as well as the summaries of anonymous ESCO interviews conducted both early and late in the pilot program in Appendix B.

ESCO PRE-QUALIFICATION PROCESS

Colorado's venture into the private sector suggests that, while companies value pre-qualified ESCO status, they may demand different qualities in an ESCO than the public sector. SWEEP's anonymous client interviews indicated that clients highly valued the technical expertise and diversity of available services of their ESCOs.

This suggests that EPC program managers and their leadership may need to consider a special solicitation to pre-qualify ESCOs for success in the private sector. This special solicitation could offer a two-part application: Part 1 would ask for the usual demonstration of

organizational strength, depth and breadth of energy services, and understanding of the state EPC Program. Part 2 would ask for a demonstration of understanding private sector dynamics.

ESCOs already pre-qualified for the public sector have successfully demonstrated Part 1, and so would need to successfully demonstrate Part 2. ESCOs new to the Colorado EPC Program through the private sector market would have to demonstrate competence in Parts 1 and 2.

An initial list of private sector market- specific ESCO solicitation and/or interview questions includes:

- The private sector operates differently than the public sector. How does your business development process ensure that the value statement of your firm is clear to private sector clients?
- How does your audit team ensure that complex measures such as process efficiency or system balancing and re-zoning are considered, quantified, and make it into the project proposal for private sector clients?
- With such variability in the structure of different businesses, how will your project development team ensure that all of the appropriate parties are represented at project inception?
- Do you accept the standardized private EPC pricing structure?
- How will your firm manage the private sector client's existing mechanical maintenance contractor relationship to ensure that they are engaged in moving the project forward?
- What means of implementation outside of EPC does your firm support?
- How will you actively recruit private sector clients into this program?
- How willing is your organization to accept non-standard TEA and EPC agreements when it is required by private sector clients?
- How will your firm ensure that the private sector client clearly understands the value of measurement and verification?
- How has your team addressed client concerns in the past, related to measurement and verification costs in the project budget?"
- What is your experience with private sector decision making hierarchy, and how will you ensure that the EPC project stays at the top of the priority list?
- Does your project team have representative project experience with crafting projects that pay back under seven years? If your ESCO does not have past experience, how does your team plan to do so with private sector clients?
- In four to five sentences, please describe your interest in engaging private sector clients in EPC. In four to five sentences, describe the unique services your firm could provide to the private sector.
- What is your firm's experience in working with private sector clients under master services agreements?

- Describe your existing relationship with trade groups or professional organizations that serve the private sector? Would CEO engagement with these organizations further promote EPC adoption in the private sector?

3.2 Standardized program documents

PROGRAM BROCHURE

CEO EPC program staff, consultants, and ESCOs historically have used the program's *Standards for Success* document to communicate critical aspects of the EPC program. *Standards for Success* identifies how the client, its ESCO, and the CEO project consultant interact as a project progresses. *Standards for Success* is integrated into a public sector program brochure, accompanied by a vertical market-specific insert. The brochure is useful in the introductory stages to increase potential client familiarity and comfort in the EPC proposition. It is a useful aid during a project to orient the project team to next steps.

Unfortunately, there was no written document, such as a brochure or fact sheet, that described the private sector EPC pilot program and its TEA cost-share incentive. That contributed to inconsistent messaging by changing team membership early in the process. Nexant's report notes that inconsistent and sporadic messaging interfered with client recruitment. Once messaging issues and client recruiting assignments were addressed, there was a significant increase in applications for TEA cost-share.

Both appendix reports suggest that a private sector-specific EPC program brochure should be developed. Content may include messages regarding not just features and benefits of interest to the private sector, but also barriers to be overcome, sort of a "readiness for EPC" checklist.

MEMORANDUM OF UNDERSTANDING BETWEEN CEO AND {CLIENT}

CEO created a Memorandum of Understanding (MOU) to execute with public sector program clients years ago. It is leveraged to demonstrate commitment to the EPC process by the client's various financial, facilities, and sustainability people and their decision-making leadership. The MOU incorporates *Standards for Success*. CEO requires execution of the MOU, and selection of a pre-qualified ESCO, to receive advice and technical assistance from one of CEO's project consultants over the life of a project, at no cost to the client jurisdiction.

The private sector pilot program incorporated *Standards for Success* into each purchase order executed for the TEA incentive payment. For a permanent program offering, the public sector MOU may be adapted to better address the private sector-specific barriers to EPC adoption.

STANDARDIZED TECHNICAL ENERGY AUDIT & ENERGY PERFORMANCE CONTRACTS, GUIDELINES, AND PROTOCOLS

Colorado's public sector EPC Program webpage provides ready access to every contract, exhibit, schedule, protocol, guideline and other documents conceived with the goal of facilitating successful projects. CEO project consultants and ESCOs leverage these documents in their work with public sector clients to develop each project phase.

Colorado's contracts were among those leveraged in developing model contracts through the U.S. Department of Energy's Performance Contracting Accelerator in 2013-2014. CEO is working with the Offices of the State Architect, Attorney General and Controller through the Colorado Chapter, Energy Services Coalition to further streamline Colorado's contracts in 2015.

Colorado enabling legislation requires measurement and verification (M&V) of energy and cost savings for the first three years of a state agency EPC project, and the first two years of a local project. The EPC Program updated guidelines in 2008 for the development of an M&V plan, which subsequently is incorporated into the energy performance contract. CEO's public sector program team saw a substantial influx of M&V reports in spring, 2014 and noted opportunities to improve the delivery and substance of M&V reports. CEO issued *Interim Recommendations for Improved Measurement & Verification* in November, 2014. A full update is anticipated in FY16, when a state version of the Federal Energy Management Program's (FEMP) *M&V Guidelines* becomes available.

Colorado's venture into the private sector with EPC encountered mixed reactions to the contracts from both participating companies and ESCOs. Nexant's report notes that smaller enterprises felt the TEA and EPC contracts were fine, while large corporations preferred using their own contract language. Several participants suggested that a permanent program offering could provide large corporations with a Scope of Work, attached with the company's Terms and Conditions.

Preparation for a permanent program launch should include a thorough review of program contracts, including general conditions. Initial thoughts about minimum requirements for the TEA Scope of Work include:

- Information about each facility to be audited.
- Level of detail to be provided in the TEA, commensurate with TEA pricing.
- The fixed price for the TEA, terms for payment (i.e. in one lump sum upon final delivery, or in phases as progress is demonstrated to the client).
- Guaranteed maximum percentages of costs, to be included in the project proposal.
- Savings guarantee upon execution of an EPC.
- A detailed provision for M&V in the TEA report.

Initial thoughts about minimum requirements for the EPC Scope of Work include:

- A clear statement of the guarantee, and a summary table of the measures to be implemented, at the beginning of the document.
- A table of the Measurement and Verification methodology chosen for each measure, and a listing of stipulated versus measured components of each analysis.
- Detail regarding the means of remediating a shortfall in savings, and a list of conditions the owner must maintain as part of the guarantee.

Anonymous ESCO interviews indicate that many have some form of contract documents to offer their private sector clients.

3.3 CEO's third-party advice and technical assistance

With each approval of the annual public sector EPC Program budget, Colorado acknowledges the value of third-party advice and technical assistance provided free of charge throughout the life cycle of a project to any client executing a MOU and hiring a pre-qualified ESCO. Comments made by board and council members and staff to CEO's EPC team suggest that the CEO project consultant's participation adds credibility, safety, and security to an involved process.

An assigned CEO project consultant:

- Evaluates the EPC Program's fit with prospective client needs and desires.
- Assists with developing the RFP for ESCO services.
- Reviews draft TEA contracts and subsequent reports.
- Helps facilitate consideration of project proposals.
- Reviews draft EPCs, post installation reports, and measurement and verification reports.
- Ensures client ease with every decision as the project develops.
- Facilitates effective communication between the client and its ESCO to ensure that project requirements are met and any hurdles are diagnosed early and effectively resolved.

Historically, Colorado has hired an external program consultant to provide third-party assistance. In 2013, CEO created an internal position to build some internal capacity for that function.

In selecting an external consultant or internal program engineer, CEO looks for the same diversity of technical skills that ESCOs provide directly to their clients: working familiarity with energy auditing, commissioning, retro-commissioning, and measurement and verification. Effective project consultants are adept at discerning whether ESCO or client requests will contribute to a successful project or generate barriers to project success.

The CEO Program team has begun to develop a Project Consultant Checklist for each of the five steps of the EPC process to ensure that critical conversations take place at appropriate times as a project unfolds.

Colorado's venture into the private sector provided feedback with respect to the project consultant function. As with the public sector, participating companies valued their CEO project consultant's advice and technical assistance at each step in the EPC process. See Section 4 for more information about private sector client and project consultant behavior in each of the five steps in the EPC process.

QUALIFYING EFFECTIVE PROJECT CONSULTANTS

Colorado's advice and technical assistance is provided by an external consulting firm as well as 75% of a CEO program engineer position. The consulting firm is selected through a competitive selection process, offered on a five-year cycle. As with ESCOs, a successful firm will demonstrate strong organizational capacity and knowledge of ESCO services and many aspects to stewarding successful completion of EPC projects.

Given the contrasting dynamics of public and private sectors, the pilot program team developed an initial list of questions for a project consultant solicitation and/or interview. This list warrants further refinement before launching a permanent program.

- Describe your background in acting as a third-party consultant for EPC: in the federal, public, or private sector?
- How would your firm ensure that the most critical parts of the EPC process are well supported and transparent?
- Describe your approach to communicating the value of comprehensive ESCO services to private sector clients that have a history of self-implementing projects.
- Does your firm have a background in working with private sector clients? If so, what kinds of various contractual agreements have you worked under (i.e. master services agreements, scope of work contracts).
- How do you plan to provide third-party support in reviewing contract documents outside of the TEA and EPC contract templates provided by the state?
- How can you leverage your experience in navigating project investigation (via energy audit, retro-commissioning, commissioning, measurement and verification) process with private sector clients to ensure that their ESCO provides the necessary level of project detail?
- Describe a situation where your scope of work deliverables for a private sector client has been completed, but the private sector client expected/requested more work under the scope. How did you deal with this situation? How would you advise ESCOs to approach this situation with private sector EPC clients?

- What are some of the largest concerns that must be addressed by ESCOs when serving private sector clients with EPC?
- What do you know about commercial PACE? (See Section 6 for more information about commercial PACE.) How might commercial PACE be leveraged into private sector EPC? Do you have any experience working with a commercial PACE project?
- Describe how you expect the consultant role to evolve over years of consulting for the private sector.

3.4 Open financial market support

Public sector interest in EPC, in part, is prompted by (1) limited funding for controlled maintenance or deferred maintenance budgets, (2) unexpected expenses due to emergencies, and (3) long-term property holds that make a bundle of short- and long-term payback facility improvement measures attractive. In Colorado, public jurisdiction funding options are limited by TABOR requirements in the state's Constitution that do not provide for multi-year contracts. The Colorado EPC Program accommodates all TABOR requirements for state and local governments through the tax-exempt lease purchase approach taken in the standard project financing contract.

Colorado does not administer a financing program for EPC projects. Instead, the Colorado EPC Program offers project financing to the open market. To facilitate project financing, Colorado offers a standardized financing bid package on its webpage. That bid package includes a Request for Proposal bid template, the lease contract, a financing proposal letter and other items to smooth and expedite the solicitation, bidding, selection and closing on project financing. All state agencies must leverage this package and work through the Office of the State Treasurer. Other public jurisdictions are encouraged to leverage the financing bid package. ESCOs must comply with Dodd-Frank regulations regarding financing procurement activities.

Other than DSM incentives and the occasional grant funding, the majority of Colorado's $447 million portfolio are municipal tax-exempt lease purchases underwritten by private sector financiers. Private sector financier interest and investment is in part responsible for Colorado's robust EPC industry performance. Colorado's enabling legislation[2] defines project financing parameters:

- The financing period cannot exceed the cost-weighted average useful life of equipment, up to a maximum 25 years.
- Project budgets must be cash-flow neutral each year.

[2] 24-30-2001 C.R.S. and 29-12.5-101 C.R.S.

- Measurement and verification must occur for at least the first three years post-construction of state agency projects, and the first two years for local government projects.

For the most part, ESCOs can approach public sector decision-makers at any time to execute a contract for a technical energy audit or an energy performance project. Governing bodies may seek project financing at any time. There may be protocols for contract approvals, but no set annual schedule.

Colorado's venture into the private sector encountered company concern about adding debt to balance sheets, and often, internally available project financing. See Appendix A Nexant's report for company-specific references. This adds to the appeal of EPC as a project financing tool.

- If a company is self-financing, there is no need for the financing contract or a lease-purchase mechanism for avoiding multi-year financing.
- Enabling legislation is a primary driver for annual cash flow neutrality in public sector project budgets. But private sector clients may find annual cash flow neutrality an appealing argument to secure internal approval to move forward with a project that enables a bundle of facility improvement measures with a combination of short- and long-term paybacks.
- Enabling legislation defines EPC in the public sector. It also may be in the interest of the state to consider legislation that defines EPC in the private sector too, in order to ensure consistency across all markets.
- If the client becomes its own financier, it has a parochial interest in knowing that the ESCO's savings guarantee is met. Private sector EPC projects should include measurement and verification for at least two or three years.

The availability of internal private sector project financing is not without complications. See Appendix A Nexant's report for company-specific references. Rather than CEO offering a financing contract structured to accommodate TABOR requirements against multi-year public debts, the ESCO is challenged to gain corporate approval for a multi-year project when the client is used to distinct annual capital budgeting processes. Those annual capital budgeting processes drive the interest in "low-hanging fruit," or facility improvement measures with short-term paybacks, and miss opportunities for a more comprehensive energy efficiency retrofit.

Early in the pilot program, SWEEP anonymously interviewed a random sample of pre-qualified ESCOs regarding their experiences and perceptions of private sector behavior around the EPC model. Late in the pilot program, Nexant, Inc. interviewed ESCOs that participated in the pilot program about their experiences with private sector clients. The following discussion describes the pilot program team's perspectives at the time of this final report.

Colorado's venture into the private sector encountered more complex and less obvious decision-making hierarchy. Local business unit managers may need to defer to an off-site corporate finance manager approval. While a local facility or finance manager may recognize the opportunity presented by EPC, their corporate office colleagues may be less receptive. There may be a split incentive between local and corporate offices as to who claims the savings. There may be a concern about whether local annual operations and maintenance (O&M) budgets are reduced because more efficient equipment is installed. Both local and corporate interests need to come together early on in the process to discuss capital improvement budget and operations and maintenance budget dynamics.

Timing is critical in the delivery of TEA reports and project proposals. A project may be delayed or not approved at all if timing is off an annual capital budget cycle schedule.

Many companies are concerned about debt on their balance sheets and will want to work within the parameters of the capital budgeting process. They will want to discuss project phasing, or limit discussion to facility improvement measures with short-term paybacks. A potential game-changer in this dynamic is the imminent enabling of Commercial Property Assessed Clean Energy (CPACE) districts at the county level in Colorado. See Section 6 for more information about that opportunity.

SECTION 4 PRIVATE SECTOR DYNAMICS IN THE FIVE-STEP EPC PROCESS

There are five defined steps in an energy performance contracting project:

Step 1: Introduction and approval to proceed
Step 2: Secondary ESCO selection process
Step 3: Technical Energy Audit and EPC project proposal
Step 4: Project funding, EPC execution, and construction
Step 5: Measurement and verification of guaranteed savings

This section compares and contrasts public and private sector dynamics in these five steps, describing client behavior and effective CEO project consultant performance.

Step 1: Introduction and approval to proceed

In Colorado's public sector program, CEO's outreach and education efforts combine with ESCO business development activity to bring clients into the program. A critical element of successful entry into the program is vetting a prospective client's fit with the EPC Program.

When the CEO EPC program manager and project consultants meet with a prospective client for the first time, the CEO team often requests a meeting attended by what will become the client's internal project team:

- Administration
- Finance
- Procurement
- Facility management
- Facility O&M staff
- Key opinion leaders amongst the building occupants

Each will play key roles over the life cycle of the project. Establishing a common understanding of the EPC process at project inception facilitates productive project management.

At that introductory meeting, the CEO team seeks to understand several things:

- The number and type of buildings, with their square footage, utility expenses, potential for future change in use, and the history of facility improvements

- Interest in any facilities other than buildings, such as water and wastewater treatment facilities, street lighting, ballparks, and pools
- Interest in special projects, such as renewable energy installations
- Capacity to manage an EPC project, with existing staffing levels
- Interest in project financing: capacity to self-finance, or interest in third-party financing
- Scheduling constraints
- Level of commitment and availability of facility managers and staff, finance officers, procurement staff, key administrative managers and ultimate decision-makers

They also seek to communicate several things, including the:

- EPC process and typical schedule
- Role of the CEO project consultant upon executing the MOU with CEO
- Rigor of a technical energy audit
- Nature of the savings guarantee
- Value of and statutory requirements for measurement and verification

Colorado's venture into the private sector indicated that properly vetting a prospective client for EPC is critical and worthy of additional time in this first step of the EPC process. See the description of lessons learned in Appendix A Nexant's report. In addition to understanding and communicating the items described above, vetting private sector clients should include the following:

- Does the company contact have a clear understanding of his/her internal decision-making requirements, and can the contact bring those parties to the table at the onset of discussions? Those parties include finance, operations/facilities people, MEP contractors, and decision makers. That might appear to be similar to a public sector client's project team, but a private sector client might have a complicated decision-making hierarchy and process to navigate. Therefore, it is crucial to identify the ultimate decision-makers.
- Vetting the company history of facility improvements. A company may express interest in an investment grade technical energy audit, with the intention of self-implementing. What is its commitment to implementing retrofits?
- A frank discussion regarding the design-build nature of EPC projects, and interest in utilizing an ESCO as a general contractor for project implementation.
    - Identify any concerns that the business may have. Is the prospective EPC client comfortable with EPC's design-build process, or will it want to revert to the traditional design-bid-build method for implementing projects?
    - Are there any MEP (mechanical electrical plumbing) contractors with existing maintenance contracts, and are they on board or resistant to EPC? If MEP

maintenance contracts do exist, the client may not be interested in a competitive bidding process that might undermine those relationships.

- Gain the attention of someone high enough in the corporate finance department to negotiate the historically separate paths of capital improvement and O&M budgeting. Bring together both business unit and finance managers to discuss capital improvement budget and operations and maintenance budget dynamics.
    - When the business has a corporate parent, determine whether the local operation will retain the utility savings over the term of project performance. Discuss the impact of that decision on project budget.
    - Ensure that the prospective client understands the idea of bundled project savings and is not focused on individual facility improvement measure payback criteria.
    - What is the company's tolerance for a seven-to-10-year payback?
    - Is the company familiar with, and open to, considering commercial PACE financing?
- Discuss the timing of the technical energy audit, reporting and project proposal negotiations to ensure deliverables meet the company's budget cycle requirements.
- Begin the discussion of measurement and verification and typical integration with project delivery and performance.

Step 2: Secondary ESCO selection process

Colorado requires all state agencies to competitively select the pre-qualified ESCO best-suited for their project. Institutions of higher education and local governments are encouraged to competitively select their pre-qualified ESCO, although some may not require that secondary selection process.

CEO provides public sector EPC clients with a list of pre-qualified ESCOs, and it also provides clients with a toolkit to support their competitive selection of the pre-qualified ESCO best suited for their project. That toolkit includes a guidance document, the standardized TEA pricing chart, a request for proposals (RFP) template, and spreadsheets to aid the client's selection committee in scoring proposals and compiling results. In particular, the RFP template encourages clients to be forthcoming with information about their facilities, square footage, utility spend, known issues, recent upgrades, potential for future change in use, any time constraints, and interest in special projects.

Colorado's venture into the private sector encountered competitive procurement requirements in the private sector similar to local governments: it may or may not be required. If not required, it is still in the client's best interest to ask questions to determine fit with the project opportunity.

The public sector template for soliciting ESCO proposals or interviewing might be modified for the private sector, to include:

- A description of the decision-making hierarchy
- A timeline for budget processes
- Descriptions of current MEP and energy management services provided
- A requirement for an ESCO statement indicating it agrees to comply with the company's contractual requirements the certain attachments, such as a Master Services Agreement (if any), and Terms and Conditions. These should be provided as attachments to the solicitation.

Step 3: Technical Energy Audit and EPC project proposal

Once a public sector client selects an ESCO, the parties enter into a TEA contract. That standardized document provides a scope of work that includes:

- Descriptions of the facilities to be audited
- Cost of the audit, as determined by a standard pricing table
- Reference to the minimum ASHRAE Level 2 quality of the audit to be performed
- Expectations for a project proposal
- Description of savings guarantee
- Measurement and verification plan.

Once the contract is executed, the ESCO performs an audit. Then begins iterative discussions with the client's full internal project team to refine audit information and build a project proposal that meets the client's needs.

Colorado's venture into the private sector suggests that the audit is a valued component of the EPC process. See Appendix B SWEEP Report 2 for more information. Many pilot program participants complimented their ESCO on the quality and depth of the information presented.

Participants displayed high expectations of the level of detail to be provided in a TEA report. Several companies pushed for engineering beyond what ESCOs need to deliver a maximum price proposal, and beyond the services covered by Colorado's standardized TEA pricing schedule. The design level that some companies requested are typical in the public sector once a performance contract has been executed, not during this step in the process.

Timing the audit, report, and project proposal development to sync with the client's budget cycle is important for conversion. See Appendix a Nexant's report for more detail. The company's commitment to taking on long-term payback facility improvement measures plays out at this time. The pilot project team found that project proposal negotiations took more time in the private sector than is typical of the public sector.

See Appendix A Nexant Report Section 6.4 for a comparison of results from self-implementation vs. EPC construction projects.

Step 4: Project funding, EPC execution, and construction

Once a public sector client and its ESCO come to agreement for a proposed project, two contracts are developed:

- A standardized financing contract that includes lease-purchase language to satisfy TABOR and enabling legislation requirements, and
- The energy performance contract, which specifies the facility improvement measures, the savings guarantee, and the measurement and verification plan.

Colorado's venture into the private sector saw variations from this well-established protocol. They are described in other sections of this report, notably in Sections 3.2 and 3.4, as well as here.

Two of the three companies that moved ahead with EPC projects did so by internally financing the projects.

Step 5: Measurement and verification of guaranteed savings

Colorado's enabling legislation requires measurement and verification (M&V) of an ESCO's savings guarantee. M&V is essential to state EPC program and ESCO credibility. Budget-constrained clients and project financiers depend on the savings guarantee to ensure repayment of financing.

The American Recovery and Reinvestment Act (ARRA) economic stimulus funding era from 2009 through 2012 stimulated a spike in EPC project activity. These projects have moved from construction to performance period. CEO staff began managing an extended spike in M&V report reviews in 2014. This provided an opportunity to develop *Interim Recommendations for Improved Measurement and Verification* in November, 2014, to supplement 2008 M&V guidance.

Colorado's venture into the private sector revealed a contrasting perspective about M&V. Some companies revealed their interest was driven by a reduced price for a technical energy, rather than a full EPC project. Those same companies placed less emphasis on measurement and verification and more on identification of viable facility improvement measures. The high quality audit from a pre-qualified ESCO was a solid basis for moving forward with self-implementation, without the need to substantiate performance to a third party financier.

SECTION 5 PRIVATE SECTOR COMMERCIAL BUILDING ENERGY EFFICIENCY PROGRAMS IN OTHER STATES

2014 Energy Services Coalition national conference

At the July, 2014 Energy Services Coalition national conference, CEO and Nexant presented lessons learned to date. These remarks appear on CEO's private sector EPC webpage. Part of the ESC presentation was an open solicitation for information about other state energy office private sector energy efficiency program offerings.

Minnesota noted that private sector EPC is permitted, but not supported. Its SEO offers businesses a technical audit, but not an investment grade audit. It also partners with the St. Paul Port Authority Trillion Btu Program to leverage ARRA funds into a revolving loan program.

New Mexico indicated that there were not enough program resources to extend EPC into the private sector at the moment, while an ongoing demonstrated need remained in the public sector. New Mexico offers a sustainable building tax credit, based on building footprint and LEED certification. The tax credit program has a cap and an expiration date.

Nevada has expressed interest in establishing a private sector EPC program. This pilot program is referenced in a white paper generated for the Commercial Energy Efficiency Project.

Other state private sector energy efficiency program services have been described in energy industry email newsletter articles. Below are brief descriptions of a few program alternatives to EPC. One is a state-managed revolving loan fund; another drives energy efficiency through a commercial PACE program.

Alabama

The Alabama Department of Economic and Community Affairs (ADECA) offers a commercial, industrial and non-profit energy efficiency and renewable energy revolving loan fund called AlabamaSAVES. The program offers a loan loss reserve and interest rate buy-down for each accepted applicant and authorized service providers.

Michigan

Lean & Green Michigan is a statewide Property Assessed Clean Energy (PACE) program open to all Michigan counties and cities for free. CEO staff met with a project developer active in Michigan's PACE activity. His business model suggests a close integration of Colorado EPC-like activities with PACE financing, offering a seamless package of services to clients from restaurants and catering halls to car dealerships.

SECTION 6 OTHER FACTORS INFLUENCING THE PRIVATE SECTOR COMMERCIAL BUILDING ENERGY EFFICIENCY MARKET

Several private sector energy efficiency initiatives are developing or maturing. This section describes the opportunity each presents.

BOMA

Just months before the Great Recession in 2008, the Building Owners and Managers Association (BOMA) launched a private sector EPC program, offering contract templates and best practices to its membership. The program quietly closed just months later, as companies felt the impacts of the economic downturn.

In 2014, BOMA renewed its interest in EPC. BOMA began exploring business models for program delivery. The Colorado pilot program team began discussions with BOMA's team in late 2014, and both parties expressed mutual interest in pursuing discussion of a public-private partnership. These discussions continue in pursuit of permanent program design.

Los Angeles Better Buildings Challenge

The City of Los Angeles Better Buildings Challenge (LABBC) is a utility-funded initiative supporting property owners and managers in executing cost-effective building performance upgrades. LABBC's goal is to achieve 20% energy and water savings by 2020. The LABBC helps facility owners take advantage of all available resources and incentives, and maximize the ROI of energy and water efficiency upgrades. LABBC offers a range of subsidized services and free resources, including consumption monitoring, subsidized audits, project development support, PACE financing, rebates and incentives, measurement and verification, and tenant engagement.

Investor Confidence Project

A project of the Environmental Defense Fund, the Investor Confidence Project works with many active allied organizations, "enabling a marketplace for building owners, project developers, finance and energy service providers, insurers, utilities, and a growing number of public programs and utilities to trade in standardized energy efficiency projects."

Its webpage further states, "The Investor Confidence Project (ICP) defines a clear road-map from retrofit opportunity to reliable Investor Ready Energy Efficiency™. With a suite of

Commercial and Multifamily Energy Performance Protocols in place, ICP reduces transaction costs by assembling existing standards and practices into a consistent and transparent process that promotes efficient markets by increasing confidence in energy efficiency as a demand-side resource."

Numerous state and local commercial PACE programs have signed on as ICP allies.

Commercial PACE (Property Assessed Clean Energy) via CoPACE

Colorado's Commercial Property Assessed Clean Energy (CoPACE)[3] program is a financing tool. It allows commercial and multifamily property owners to finance qualifying energy efficiency, water conservation and other clean energy improvements on existing and newly constructed properties. Repayment of the financing is through a voluntary assessment on their property tax bill. Interested property owners opt to receive long-term (capped at 20-year) financing for as much as 100% of the cost of these improvements. This arrangement spreads the cost of clean energy improvements -- such as energy efficient lighting, upgraded insulation, new glazing, solar installations, co-generation, waste-to-energy systems, water conservation measures, roof and HVAC upgrades – over a longer period than could be obtained with traditional debt financing. CoPACE helps address split incentives, in many cases allowing landlords to pass on both the benefits and the costs of CoPACE assessments directly to their tenants. CoPACE will provide financing for existing and new commercial, industrial and agricultural properties, as well as multifamily properties with five or more units. At present, residential properties with four or fewer units are excluded from the program.

Private investors, who will purchase the CoPACE assessments, will provide financing. The district will post a list of pre-qualified capital providers on its website and property owners are free to arrange financing with one of the listed capital providers, or to bring their own capital provider to purchase the CoPACE assessment (i.e. fund the project). The CoPACE administrator can provide assistance to match capital providers from the pre-qualified list with projects when requested.

Pilot program team members reached out to the pre-qualified ESCO pool to gain reaction to CoPACE in mid-2014 when CoPACE development was in its infancy. Initially, ESCO reaction was hesitancy until formal CoPACE program guidance was available. Since that initial outreach, at least two ESCOs with keen private sector interests have regularly participated in CoPACE board meetings. Another ESCO testified at a legislative hearing in support of commercial property tax credit bill.

[3] The Colorado General Assembly passed the New Energy Jobs Creation Act of 2010 (HB 10-1328), as amended by the New Energy Jobs Act of 2013 (SB-13-212) and SB-171, enacted in 2014. These statutory provisions are codified at C.R.S. 32-20-101 et seq. (collectively, the "CoPACE Statute").

Green Lease Leaders

In tenant-occupied buildings, landlords are challenged with financing energy efficiency improvements and sustainable building operations, when tenants benefit by lower utility bills.

Green Lease Leaders ™ was developed by the Institute for Market Transformation, with support from the U.S. Department of Energy's Better Buildings Alliance and real estate practitioners, to set (1) standards for green leases and (2) recognize companies and brokerage teams that successfully incorporate green lease language into new or existing leases.

Benchmarking via Denver City Energy Project

Denver is one of 10 cities across the nation participating in a joint Natural Resource Defense Council/Institute for Market Transformation project to encourage benchmarking and performance measurement in commercial and multi-family buildings. In exchange for their commitment to benchmark, Denver City Energy Project participants receive formal recognition, training on how to benchmark and improve building efficiency, and assistance in engaging building occupants to improve building performance. The program is a partnership of the City and County of Denver, Denver Metro BOMA, Xcel Energy, the International Facility Management Association Denver Chapter, and the Energy Efficiency Business Coalition.

Corporate sustainability

Sustainability initiatives are included in corporate marketing, branding, and investor reporting. As a part of sustainability, energy and water efficiency are seen as market differentiators.

Main Street Efficiency Initiative

During the several years that American Recovery and Reinvestment Act (ARRA) funds were available to states through the U.S. Department of Energy, Colorado offered a Main Street Efficiency Initiative (MSEI). MSEI was designed to accelerate energy efficiency in downtown business districts through ASHRAE Level 1 energy audits, DSM incentives and a bit of competition for recognition. It provides an early model for accelerating energy efficiency in private sector commercial buildings.

SECTION 7 CRITICAL ELEMENTS OF PERMANENT PROGRAM DESIGN

Any manager proposing a major addition to a Colorado Energy Office program first must diligently research four critical elements of program design:

- The state's role in addressing a market failure
- Legislative or regulatory basis
- Funding sources
- Staffing needs

State's role in addressing a market failure

The September, 2013 Lawrence Berkeley National Laboratory (LBNL) report *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry* describes the results of LBNL's collaboration with the National Association of Energy Service Companies (NAESCO) to describe industry and market trends and remaining market potential. It indicates that ESCOs reported relatively low market penetration levels (9%) in private commercial sector buildings, compared to traditional public EPC vertical markets (see Table ES-1 in that report). Their preliminary analysis found that there is considerable ESCO opportunity in all market segments, and quantified the private commercial building sector at about $14 billion - $34 billion. The report indicates that just 8.1% of the 2011 ESCO industry revenue came from the commercial and industrial market, equal to $419 million (page 19). A conversation with NAESCO Director Don Gilligan indicated that private sector EPC projects historically have resulted in relatively shallow retrofits, i.e. lighting only.

The 2013 LBNL report references barriers to implementing the comprehensive energy projects in private commercial facilities remained high: *"ESCOs report that private sector companies in the U.S. are generally averse to financing energy efficiency work, as well as to allocating capital expenditures for energy projects that have relatively long payback times… ESCO reported that its private sector customers were only interested in pursuing projects with extremely short payback times (1-2 years)."* That report's Table 3 indicates that between 2009 and 2011, 50% of commercial and industrial clients financed their projects with cash, 4% by partial cash, 23% by term loan, 2% by state or local bond, 5% by lease and 16% by other means, including an efficiency services agreement.

CEO's vision and mission encourage energy efficiency in all market sectors, which benefits the economic and environmental health of the state. The state's role in public sector energy efficiency is lending credibility to EPC, a somewhat involved mechanism for financing energy

and water efficiency improvements. Its role includes smoothing the path to successful projects with ESCO pre-qualifications, standardized contracts and measurement and verification guidelines, and advice and technical assistance.

Colorado's venture into the private sector to drive comprehensive energy efficiency is supported by its mission and motivated by economic and environmental benefits, too. Energy efficiency will reduce recurring utility expenses, provide healthier work environments, and improve company sustainability or stewardship profile with employees, clients and shareholders. This venture into the private sector did lend credibility to EPC. Several companies noted its increased comfort with EPC backed by success in the public sector.

Section 5 of Appendix A Nexant's report identifies four major barriers to increased uptake of EPC as the tool to make comprehensive energy and water efficiency improvements in private sector facilities:

- Need for "business friendly" contracts
- Extended decision-making hierarchies
- Company demand for short paybacks
- Internal financing and project phasing

Two of the four easily can be addressed. Section 3 of this report describes an alternative approach to contracts better suited to the private sector. The decision-making hierarchy will be vetted better and addressed in Step 1, the introductory phase of the EPC process, in a more permanent program. A company's outlook on payback periods may be better vetted in the introductory phase, but may not be fully addressed without a market intervention.

The last two barriers are more complicated and need to be addressed programmatically and project-specifically. Commercial PACE programs may address both barriers. Commercial PACE provides the opportunity to engage a prospective client in a discussion about the off-balance-sheet financing of a comprehensive bundle of facility improvement measures. It serves as an alternative to selecting the quick payback recommendations that fit an annual capital budget cycle.

But who engages the client in that discussion: a project developer, perhaps following the Michigan PACE project developer business model, or an ESCO pre-qualified by a state energy office private EPC program? For those private sector facility owners that share the public sector EPC client risk adversity and long-term property hold, such as private universities, will EPC prove to be the more attractive of the two approaches? Those are the questions that the CEO EPC program manager will be researching as a result of this pilot program.

Legislative or regulatory basis

Colorado has enabling legislation that defines the requirements for state agency, higher education and local government energy performance contracting projects. A project's maximum financing period cannot exceed the cost-weighted average useful lifetime of equipment, no more than 25 years. Annual savings must exceed annual payments. Measurement and verification of energy and cost savings must occur for the first three years of a state project and the first two years of a local project.

Colorado will be investigating whether it is necessary and/or desirable to have similar language on the books for a private sector program offering. At the time of this report, staff was leaning toward yes. It is desirable to have a definition of EPC common to all sectors.

Program funding

Most of the funding for Colorado's venture into the private sector with EPC came from the 2011 DOE Competitive Award. The non-federal match came from Colorado's Clean and Renewable Energy Fund, as well as participating company payments towards TEA costs.

STATE PROGRAM FUNDING SOURCES

In recent years, Colorado saw an unprecedented amount of energy-related legislation, including the establishment of state funds to support energy efficiency programs: Clean and Renewable Energy Fund, Innovative Energy Fund, and Public Schools Energy Efficiency Fund. The first two are based on rolling appropriations, while the third is annually appropriated, through FY16.

A combination of state funds and DOE State Energy Program funding underwrites public sector EPC Program staffing and contractual expenses. At the time of this report, staff anticipates the same for a private sector program rollout.

INCENTIVES

State-based incentives

The DOE Competitive Award provided the funding to offer an incentive to companies willing to participate in the pilot program. No TEA cost-share had ever been offered to public jurisdictions. At the time of this report, without an incentive, Colorado ranks number four in the nation in total public sector investments through EPC, according to the Energy Services Coalition Race to the Top webpage.

Based on Colorado's venture into the private sector, the pilot program team felt that the TEA cost-share incentive skewed company participation. Appendix A Nexant's report documents

that some companies participated in the pilot program to receive a discounted price on a high quality audit, without disclosing an intention of self-implementing ESCO audit recommendations until late in the process. Toward the end of the project, Nexant interviewed two companies that elected to self-implement, rather than executing an energy performance contract. In the more than one year since completion of their TEAs, neither company had implemented any of the TEA recommendations at the time of Nexant's call.

While this behavior was exhibited by only two of 13 total companies, it was an important lesson learned. Self-implementing companies that subsequently do not implement create three concerns:

- CEO is interested in driving measureable private sector energy efficiency results in a permanent program offering.
- An incentive program should result in measureable results.
- The ESCO business model often includes a strong TEA to EPC conversion rate.

The TEA incentive did induce participating companies to complete the TEA report and project proposal before the stated deadline for incentive payment. Yet incentivizing the report did not always induce the commitment to implementing measureable energy efficiencies.

If funding for incentives is found, the pilot program team does not support incentivizing the audit fee upon receipt of a final TEA report. Rather, incentivize measureable energy efficiency results. A permanent program might offer an incentive payment toward either the TEA fee upon execution of a performance contract, or facility improvement measures implemented through performance contracting.

Utility-based incentives

Demand Side Management (DSM) incentives result in actual, measureable residential, commercial and public facility energy efficiency improvements. Colorado's ESCO base contract requires ESCOs to research applicable utility-based DSM incentives when developing public sector EPC project proposals, allowing a comprehensive package of facility improvement measures to become more affordable, and therefore more attractive to clients. Utility-based DSM incentives have the same impact on the affordability of private sector EPC projects. Colorado's public sector EPC program requires its pre-qualified ESCOs to identify all available incentives and grants applicable to its clients' EPC projects.

ESCOs active in the pilot program provided the same service. See Appendix B SWEEP Work Products Report 1 for a summary of utility incentive programs currently available.

Program staffing

CEO's public sector EPC program labor resources include:

- A Program Manager at CEO, who dedicates 100% of the time to EPC.
- A Program Engineer at CEO, who dedicates 75% of the time to EPC project consulting and the program's process management, continual improvement, and market development initiatives.
- A Program Associate at CEO, who contributes to administering the annual ESCO reporting and Base Contract renewal process and takes on other special assignments.
- An external program consultant, who is contracted for about 2,400 hours in the current contract year.

Colorado's venture into the private sector suggests that effective private sector EPC program staffing, whether contractor or internal staff, should have a commercial real estate or business finance background, in addition to the working familiarity with energy management. See Section 3.3 for more information.

Several tasks to be completed in preparation for full program launch include:

- Qualifying CEO project consultant(s) for advising and providing technical assistance to client companies
- Updating to standardized contracts, guidance and protocols
- Pre-qualifying ESCOs
- Initiating an advisory committee
- Developing a marketing plan and collateral materials
- Coordinating with CoPACE, Colorado's Commercial Property-Assessed Clean Energy program
- Coordinating with utility DSM and other incentives

SECTION 8 PROGRAM IMPLEMENTATION

There are three important elements to a successful program launch:

- An advisory group
- Collateral material
- Marketing plan

This section describes considerations for all three.

Advisory group

The Colorado Chapter of the Energy Services Coalition and its membership have been critical to the state's success in driving public sector energy efficiency with EPC. Chapter members (ESCOs, financiers, clients) have contributed to the development and evolution of standardized contracts and other documents, executed outreach and marketing strategies, and served as a sounding board for ideas and initiatives.

An advisory group could provide the same benefit to the private sector, and could help to develop a proposal for permanent program design. Trade organizations, professional organizations, and economic development interests could contribute valued knowledge and networks to successfully designing and launching the program. Appendix A cites a few trade organizations by name.

Collateral materials

Traditionally, public programs create collateral materials to effectively market program benefits and services and facilitate participation. CEO uses its website, program brochures and case studies in its work.

WEBPAGE

Colorado's public sector is served well by CEO's public sector program webpage. It not only describes program impact and the EPC process, it also provides access to the list of pre-qualified ESCOs and every standardized contract, protocol and guidance document used over the lifecycle of an EPC project. As such, it is useful to not only jurisdictions interested in EPC, but also as a reference to those that have projects underway.

No webpage was offered for the pilot program. It was not until after TEA incentive funds were depleted that Colorado provided a private sector EPC pilot program webpage. The webpage

presented a text version of the presentation made at the 2014 Energy Services Coalition Market Transformation Conference in St. Paul, MN. The webpage will be updated with this final report. With a decision to move forward with a permanent program launch, the webpage should be updated again to provide the same utility and transparency as demonstrated on public sector EPC webpage.

BROCHURE

In the last year, CEO created its public sector program brochure by integrating its *Standards for Success* with an overview of performance contracting, the type of facility improvements enabled through EPC, statistics, and a list of pre-qualified ESCOs. It is an important collateral material for introductory meetings with program clients and a reference as a project progresses.

Colorado's venture into the private sector lacked a brochure or other document to provide prospective pilot program participants with a written reference to the program offer. One task in launching a permanent program is developing a private sector-specific brochure, emphasizing aspects of EPC that resonate with that sector.

CASE STUDIES

In the absence of many case studies in the public sector program, CEO staff recently developed a series of vertical market-specific program brochure inserts. The insert provides an FY14-end statistical profile of program performance that is shared with potential new clients in introductory meetings.

One of the three participating companies interviewed by SWEEP as it completed construction specifically mentioned that case studies would be helpful, with in-depth information on time frames, processes, barriers, and challenges. Nexant gathered the raw material for two case studies in the pilot program.

Marketing plan

Colorado's pool of pre-qualified ESCOs often expressed the importance of CEO's visible participation in organizations and their events to promote the public sector program. ESCOs feel that presence supports their business development work. Opportunities abound for peer-to-peer exchanges in public sector markets, through organizations such as:

- Colorado Association of School Business Officials
- Colorado Association of School District Energy Managers
- Colorado Counties, Inc.
- Colorado Municipal League

Through anonymous interviews, ESCOs indicated they felt the same way about CEO's visibility with private sector trade groups and professional organizations: it lends credibility to the relatively unknown EPC process.

In public sector EPC, executed contracts are public documents. Program staff readily can prepare public sector market penetration rates. Public sector project leads have offered to speak at public events and to be quoted in case studies and other promotional materials.

Colorado's venture into the private sector indicates that may not be the case in a private sector program offering. Note that all identifying company information is redacted from all appendices, for reasons of private sector confidentiality and competitiveness reasons.

An advisory committee can contribute to the development of a marketing plan. A potential partnership with BOMA may provide this marketing function. Section 3.1 suggested a question for the ESCO pre-qualification process in which ESCO candidates may describe existing relationships with trade groups or professional organizations that serve the private sector. An SEO may wish to engage them in its outreach and marketing.

SECTION 9 CONCLUSION

Colorado's venture into the private sector provided valuable insights into the drivers for energy efficiency investments. Public sector clients value EPC overall as a funding mechanism to eliminate a backlog of deferred maintenance in facilities they will own in perpetuity. Appendix A Nexant's report and Appendix B SWEEP reports suggest that private sector clients particularly value components of EPC: the technical energy audit, pre-qualified ESCOs, and CEO's technical assistance. Often companies expressed appreciation for the high quality information presented in the TEA report, focused on comprehensive facility management.

The pilot program team identified four barriers to accelerating uptake of EPC to drive private sector commercial building energy efficiency:

- Need for "business friendly" contracts
- Extended decision-making hierarchies
- Company demand for short paybacks
- Internal financing and project phasing

Two of the four easily can be addressed. Section 3 of this report describes an alternative approach to contracts better suited to the private sector. The decision-making hierarchy will be vetted better in Step 1, the introductory phase of the EPC process, in a more permanent program. A company's outlook on payback periods may be better vetted in the introductory phase, but not fully addressed without a market intervention.

The last two barriers are more complicated and need to be addressed programmatically and project-specifically. Commercial PACE programs may be key to addressing both barriers. Commercial PACE provides the opportunity to engage a prospective client in a discussion about the off-balance-sheet financing of a comprehensive bundle of facility improvement measures. It serves as an alternative to selecting the quick payback recommendations that fit an annual capital budget cycle.

In addition to the lessons learned from Colorado's pilot program, several other initiatives may bolster permanent program effectiveness. Colorado will further its careful consideration of:

- BOMA's national presence as a member organization and its own interest in private sector EPC make for an interesting public-private partnership opportunity.
- The Investor Confidence Project's growing recognition among PACE programs and project financiers across the country warrants a deeper look at protocols and their compatibility with Colorado's rigor in EPC.

- Green Lease Leader™, as a tool to address split incentives for energy efficiency investments in tenant-occupied buildings

As a result of this pilot program, the Colorado Energy Office will be assessing the appropriate permanent program offering(s) to drive energy efficiency into the private sector. The first locally-enabled districts in Colorado's statewide commercial PACE program launch in 2015. A private sector EPC program offering may complement CoPACE, providing a mechanism for comprehensive energy and water efficiency improvements, performance guarantees and measurement and verification.

APPENDICES

Appendix A Nexant, Inc. final report

Appendix B SWEEP reports

APPENDIX A

Nexant, Inc. final report

One of the key elements of the success of Colorado's public sector EPC program is the provision of free advice and technical assistance to any public jurisdiction signing a standard Memorandum of Understanding with the CEO.

CEO hired Nexant, Inc. to provide participating companies the same level of advice and technical assistance during the pilot program period. CEO, DOE and Nexant also invested time in dissecting company behavior and reaction to energy performance contracting and its major components.

Nexant's final report describes company engagement in the pilot program.

Since Nexant finalized its report in December 2014, the pilot program team compiled following information about executed energy performance contracts.

- The three executed EPC project budgets were:
  - $1,299,996
  - $2,608,916
  - $177,396

- The three executed EPC project terms were:
  - 6 years
  - 15 years
  - 3 years

- At least one additional participating company has expressed renewed interest in implementation.

See Section 6.4 in Nexant's report for a list of the facility improvement measures implemented.

Energy Performance Contracting in the Private Sector

Lessons Learned and Market Barriers

Final pilot program report submitted to

Jeanna M. Paluzzi
Program Manager

By

Nexant
Brian Carlin
Senior Project Engineer

December 31, 2014

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1 EXECUTIVE SUMMARY

In spring 2012, Nexant, Inc. was contracted by the Colorado Energy Office to support Private Sector Energy Performance Contracting (EPC) projects throughout Colorado with the intent of documenting lessons learned and overall market barriers. While the program originally encountered low interest from private sector participants, by the spring of 2013 the program had numerous applications. Eventually, the program expanded to serve more than twice the number of participants expected at program launch. Overall, private sector pilot program participation represented a diversity of industries across Colorado and the potential for EPC to provide technically sound energy solutions to new market segments. This program achieved a variety of retrofits: extensive chilled water upgrades, air handling units, building automation system (BAS) controls upgrades, and industrial process water heat recovery to pre-heat boiler makeup water. The depth and diversity of energy conservation measures (ECM) recommended through the Technical Energy Audits (TEA) generated from this program illustrate the great value that EPC can provide to the private sector.

2 ORIGINS AND EVOLUTION OF THE PROGRAM

In Fiscal Year 2011, the U.S. Department of Energy (DOE) issued Funding Opportunity Announcement (FOA) DE- FOA-0000533. The objective of Area of Interest 1 of this FOA was to increase the penetration of existing whole building retrofit activities and establish a strong retrofit market in commercial buildings by addressing policy, regulatory, and other barriers that limit or preclude such investments. Colorado's program directly addressed this objective by leveraging the State's public sector EPC experience to target segments of the private sector through a TEA (the same as an investment grade audit) buy-down program using funding provided by the DOE's State Energy Program. This funding differs from traditional grant funding in that it was provided through a cooperative agreement, which led to a close partnership between the DOE, the Colorado Energy Office (CEO), and the CEO's sub-recipients in achieving the project's objectives.

At project inception, hospitals were a target market sector for this program, based on guidance provided by the energy service companies (ESCOs) participating in the CEO's public sector program. However, through the course of this program, it was determined that although hospitals have high energy use, long-term owner occupancy, and facility staff engaged in actively improving building efficiency, there was little interest in the private EPC program. The lack of interest from hospitals was due to relatively modern facilities and proactive energy management staff making improvements. The project overcame the lack of hospital interest to achieve industry diversity through active program marketing and ESCO engagement. As a result, CEO approved project applications from companies representing a total of six major markets and 17 market sector categories, as listed in Table 1 below.

At the outset, the cooperative agreement's goal was to engage with 10 companies over the course of the two-year program. Initially the CEO's outreach approach was direct marketing by one of its past regional representatives. This approach resulted in the program holding introductory discussions about EPC with three projects in the first year. The original letters of

support from a variety of businesses in Colorado did not materialize into program participants, but rather represented a diverse group of businesses who supported the idea of private sector EPC without being interested in engaging in the process themselves. Once an application process was formalized, and the ESCOs and CEO began more actively marketing the program in the second year, there was significant growth in interest from the private sector. Uptake was further aided by DOE's decision to extend the award to 3.25 years.

Over the course of the pilot program, there have been nine application rounds totaling 32 applicants, which yielded 27 companies that considered moving forward with an EPC project. Companies that moved forward from the application phase were those that demonstrated facility need, motivated staff, and were truly ready to mobilize around the EPC process. Of the 27 companies, 16 worked with an ESCO to develop a TEA, which allowed them to consider performing energy saving improvements. The remaining 11 companies determined that EPC was not the most appropriate option for implementing energy saving projects and shifted focus to other business necessities. This program performance far surpasses the initial program goals. Table 1 below documents characteristics of the projects involved with the program since program launch. Blank cells are due to the projects not completing the TEA phase, or the field not being applicable to the project listed.

To illustrate the geographic diversity in the program, the following counties throughout Colorado were represented by the projects involved in the Private Sector EPC program. The following list includes 10 of the 63 counties in Colorado (approximately 15%):

- Denver County
- Boulder County
- El Paso County
- Summit County
- Jefferson County
- Arapahoe County
- Adams County
- Douglas County
- Morgan County
- Larimer County

Table 1 - Program Participant Summary

Basics	Project Characteristics (TEA Estimates if all recommended measures implemented)				
Industry	**Area (sq ft)**	**kWh saved**	**Therms saved**	**Water (gal)**	**Total annual cost savings**
Office 1	193,811	2,133,643	10,472	-	$ 196,847
Office 2 - Non-Profit	-	-	-	-	-
Office 3 – High Tech Training Facility	-	-	-	-	-
Medical 1 - Assisted Living	-	-	-	-	-
Medical 2 - Assisted Living	-	-	-	-	-
Medical 3 - Hospital	-	-	-	-	-
Medical 4 - Hospital	-	-	-	-	-
Manufacturing 1	-	-	-	-	-
Manufacturing 2	-	405,550	8,547	-	$ 50,915
Manufacturing 3	42,000	892,736	3,649	-	$ 60,934
Resort 1 - Lodging	388,625	1,408,000	210,159	2,235	$ 248,329
Resort 2 - Ski Operation	21,000	92,659	12,922	-	$ 14,992
Resort 3 - Ski Operation	-	2,086,449	-	-	$ 204,472
Property Management 1 - Apartments	118,309	551,578	19,669	537	$ 133,080
Property Management 2 - Apartments	215,963	419,928	350	947,000	$ 56,505
Property Management 3 - Apartments	116,693	272,271	27,533	-	$ 57,295
Property Management 4 – Commercial Property	55,000	187,892	2,290	-	$ 22,489
Property Management 5 – Commercial Property	-	-	-	-	-
Property Management 6 – Commercial Property	80,005	288,920	-	-	$ 19,495
Misc - Communication Station	45,511	676,060	25,198	-	$ 64,482
Misc - Banking	75,625	884,922	24,246	399	$ 42,420
Misc - Warehouse	412,340	1,118,299	6,842	-	$ 99,864
Misc - Community Center	330,685	1,346,006	84,357	2,484,000	$ 163,333
Misc - Skating Rink	-	-	-	-	-
Misc - Car Dealership	-	-	-	-	-
Misc - Private School	62,000	99,275	1,932	-	$ 15,352
Misc - Oil and Gas Production	-	-	-	-	-
	2,157,567	12,864,188	438,166	3,434,171	$ 1,450,804

3 PROJECT DESCRIPTIONS AND LESSONS LEARNED BY MARKET SECTOR

The following section details the projects involved in the Private EPC Program and is organized by market sector. The write-ups include a description of the project and the primary lessons learned from that project.

3.1 Office Building

Company	Details
Office 1 ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business is involved with advanced manufacturing and laboratory testing of technologies, along with numerous office spaces to house their engineers and business employees. Their facilities serve a variety of industry research and development activities, but the facility included in the pilot program is primarily utilized as an office space. The staff on site is technically savvy and was extremely engaged in vetting the TEA and EPC. Due to the company's commitment to reduce their global greenhouse gas emissions, the lead facilities engineer engaged with their ESCO in February, 2013. Throughout the TEA phase, the customer contact was very focused on getting highly detailed system retrofit recommendations. Due to this level of engagement, the ESCO recommendations were finely focused and gave them design-level information to consider. This level of detail pushed deeper than most ESCOs are typically willing to commit to during the TEA phase of the project. Overall the company received a comprehensive list of measures for their facility to consider implementing in the next phase of their project. The corporate structure (subsidiary of a large parent organization) caused this project to nearly stall out on numerous occasions. This illustrates a valuable lesson learned in dealing with a branch of a corporation that is highly motivated to complete a project, while the parent corporation has many other considerations that make project implementation slow, if not impossible. Additionally the CEO's purchase order process was a large hurdle for this business as it required a lot of coordination to execute. The process of applying to receive federal funds and registering for a DUNS and SAMS number also slowed the project tremendously.
Office 2 (Non-Profit) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed	This non-profit organization acts as a public education museum. The majority of the facility space is dedicated to offices housing employees. This project was involved with the CEO program through the introduction phase and was brought forward by an ESCO that did not bring any other projects into the program. Their non-profit status made it very difficult for the decision-making hierarchy to consider a project that would not be fully grant funded. They typically move forward with projects by gathering a rough idea of the scope and then waiting as many years as it takes to apply and receive funding through

☐ Self-Implement ☐ No Action	grants or other no-cost funding accessible to non-profits. They appreciated the idea of conducting one large-scale project to ensure that a comprehensive retrofit took place, but were primarily interested in gaining a low-cost energy audit that they could keep on the shelf for a grant opportunity in the future. This site is one of the many lesson-learned examples showing that the participant's perception of financing options is a critical factor for EPC projects. The understanding of project financing needs to be fully vetted in the very early stages of project development, along with a clear focus on implementation.
Office 3 (High Tech Training Facility) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business operates transportation services. Their local facility primarily houses employees in office space, but also includes dedicated high tech simulation equipment for training personnel. They began considering EPC at the same time that they were determining the facility plan for the coming five to 10 years. The facilities staff was fully interested in the potential of a robust project at their building when introduced to the EPC process, and considered engaging in a TEA. Many of the facilities involved in the program provide office space. They experience uncertainty in their term of property hold due to an uncertain future for their company, or the potential for the company to restructure. In this case, the city in which the facility was located played a large role in the project not moving forward. The net benefits of the current location (when weighed against other facility locations across the country) cast doubt regarding additional investment in their Colorado campus. After further internal discussion took place, the business came back with the decision that they would not be able to move forward with EPC until they were more certain about their business maintaining Colorado presence. The lesson learned in this case is that project consideration can rely upon the term of occupancy for businesses like this. Uncertainty regarding facility investment term plays a large role in whether or not a project moves forward with private sector participants.

3.2 Medical (Assisted Living or Hospital noted in Parenthesis)

Company	Details
Medical 1 (Assisted Living) ☑ Introduction ☐ TEA Contract ☐ TEA Report	This business operates a senior assisted-living medical facility. They own facilities along the Front Range of Colorado and were interested in auditing multiple facilities. This project brought additional diversity to the program and covered a region spanning Denver, Fort Collins, and Colorado Springs with their

☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	facilities, which is why it was considered as an applicant for private EPC. Although the CEO consultant worked diligently to support the business in moving forward with introduction phase presentations, they ultimately did not want to move forward unless they could get a TEA buy-down for each building. A valuable lesson learned from this project is that businesses that demonstrate a focus on the TEA buy-down funding are not fully committed to comprehensive retrofits. They are searching for an inexpensive energy audit to illustrate what retrofits should take place and the associated costs and savings.
Medical 2 (Assisted Living) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This company operates a senior assisted-living medical facility. They had a complex of three buildings that they were hoping to take from a deferred maintenance process to a proactive strategy. This project became involved in the pilot program mid-stream and included EPC introduction meetings and ESCO selection communication. A third-party energy consulting engineering firm was responsible for this company's application to the program. This third-party firm made communication very difficult with the company, as they initially insisted upon being in the middle of communication. After the third party determined that they could not implement an ESCO-size project on their own, they allowed the CEO's consultant to work more directly with the company to support them in selecting an ESCO. After long delays in responsiveness from the company, they determined not to move forward with a TEA due to the timeline for TEA completion (six months). Additionally, their staff had limited capability to perform a comprehensive energy project after a flood occurred and immediate construction was required to repair the facilities. The lesson learned from this project is that a third party that wants to act as a go-between and not part of the project team, makes communication difficult and takes the focus away from project implementation.
Medical 3 (Hospital) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This organization runs a hospital out of a facility complex in the northern Front Range of Colorado. Their business requires a high number of air exchanges hourly as well as precision heating and cooling for doctor and patient comfort throughout the buildings. Surgery rooms located within the building drive extremely high air exchanges and are among the most energy intensive spaces. As hospitals were originally one of the primary focuses of this pilot program, working with Medical 3 was an exciting prospect. One of the most problematic components of the project from the beginning was the fact that the business already had invested so much in existing infrastructure that it did not have many low cost opportunities to make a bundled EPC project attractive. This project acted as a case study for

	separating Surgical Operating Room cooling and outside air requirements from the existing central plant. The hope was to determine the hard costs, savings, and payback by working with an ESCO through a measured and verified process. This project did not move forward for a variety of reasons. They included unexpected approval of a new construction project, along with the 25% TEA cost match ($8,333 for this project), which would have required the facilities staff to submit a capital funding request. This kind of funding request only occurs once a year in July, which would not have allowed the business to complete their study by the program deadline. The lesson learned from this project is how important clear program marketing is for participants to feel well informed. Consistency of communication regarding program requirements between the ESCOs and CEO's program documentation and consultant support is critical. In addition, timing of funding requests in the private sector is critical.
Medical 4 (Hospital) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This organization runs a hospital in the central Colorado Rocky Mountains. Their facility is particularly energy intensive because of the heating load necessary in a high altitude climate. The primary space use within the building is patient care, but there are also offices throughout for medical personnel. Due to the age of this facility (constructed within the last 10 years), and the fact that their equipment is in good shape, it was apparent after the EPC introduction presentation and follow-up conversations that a project would not likely move forward at this site. The facilities staff has been taking care of replacements proactively and continually is working to optimize system performance. Their largest opportunity is through optimization of their building automation system and controls. This kind of facility is better served by a retro-commissioning study than a performance contract. The lesson learned in this case is that a future CEO Private EPC Program may be better suited by making information available on a variety of facility retrofit options including: retro-commissioning, commissioning, ASHRAE Level 1 and 2 energy auditing.

3.3 Manufacturing

Company	Details
Manufacturing 1 ☑ Introduction ☐ TEA Contract ☐ TEA Report	This business operates manufacturing facilities for high tech data processing components. Some of the buildings in their campus were in the process of being retrofitted to data center farms to support the business need for advanced computing and modeling of new product

☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	lines. Their square footage was split between manufacturing/data center space and office space to house staff. This project was not able to move forward with the pilot program because of the short timeline (between December and January) since the applicant responded to a later application round. The CEO consultant supported the site contact with an EPC introduction presentation and follow-up conversations. The facility manager was hoping to get his organization to the point that they could consider EPC for this division of the business. (EPC has been done in different divisions before, but primarily just for lighting retrofits). They were not able to participate further in the program due to the deadline for finalization of a TEA. A recent email communication stated that the site contact has made progress in pushing the organization to consider a five-year ROI instead of their standard two years. They still will be considering measures based on line item ROI, but this is an incredible first step in clearing the way for a potential EPC. They are hopeful that in the coming year they may be afforded the opportunity to consider EPC for their site. The lesson learned here is that short payback requirements can be successfully used to pre-filter projects for the program. CEO should ensure that a business's expectations of EPC project performance are realistic and fit well with the concept of bundled comprehensive retrofits.
Manufacturing 2 ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business operates a plant which utilizes petrochemical waste products to generate new end user products. They have tremendous heating loads throughout their process and required advanced strategies for evaluating and quantifying retrofit opportunities. While a small portion of their site is comprised of office space, the majority of the manufacturing equipment is not enclosed and open to the environment. Although this project spanned two years, the project really moved forward when the deadline for completion of the TEA was shortened to six months. They displayed slow decision-making due to prioritization of other projects and staff availability (there were only 13 staff members at the manufacturing facility). The project halted numerous times over the year-and-a-half period before to the program TEA deadline was established. The national decision-making chain of this company also made it difficult for this regional facility to gain project approval above other proposed projects. Now that the project is making steady progress, they have currently moved forward with submission of a Phase 1 budget for approval. This project includes extremely comprehensive process efficiency measures which have addressed many long-standing energy concerns on site. The lessons learned in this project are twofold: (1) A division of a national

	company has difficulty gaining approval to even fund the TEA. (2) A seasonal application process, the TEA generation and TEA buy-down funding process are much more effective at moving projects forward than an open enrollment program.
Manufacturing 3 ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☑ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business manufactures sheet metal components, among other product lines. Their facility is largely a warehouse for manufacturing, but also includes some staff offices. This was one of the earliest projects to make substantial progress in generating a TEA. The company considered third-party project financing. Ultimately, decision-makers fell back on funding the project through phased internal capital instead of putting debt on the balance sheets. They did move forward with execution of a small-scope, phased EPC contract. Two phased have been implemented. The great difficulty with funding projects internally is that the comprehensive EPC approach typically does not fit within a single year's budget. This leads to a phased project even when the projects are relatively modest in size. The staff members involved with the project have been incredibly knowledgeable regarding the manufacturing processes in place. They critically reviewed all of the ESCOs recommended measures in a constructive manner. They continually supported their ESCO in digging deeper on retrofit measures and finding process efficiency opportunities. One of the lessons learned at this site was that not having pared down, "business friendly" revised contracts was a considerable barrier to implementation and delayed the progress of this project. Also, the phased internal financing of the project is going to be common across many businesses, which can stall or completely end project progress due to the annual budgetary cycle timing. At a follow-up meeting in September, 2014, the business revealed that it is doing something unique by pursuing EPC in its region. They mentioned that other local businesses are not likely to move forward with project paybacks greater than one year. This is the common ideology of local businesses and rarely are there companies willing to consider comprehensive project implementation. The TEA buy-down was a huge factor in their consideration of this process since "cash is hard to spend on something like a TEA when there isn't a definite return on investment." Most other businesses that they know of would need a guarantee of return on investment up front prior to the TEA. Furthermore, their local utility offers them an energy audit every two to three years if they demonstrate that they are willing to implement the recommendations. They feel that the success of a future EPC program in Colorado hinges on partnering with local utilities to help buy down the

	audit cost. Additionally, they see value in the CEO partnering with professional organizations like the Colorado Advanced Manufacturing Association (CAMA) to disseminate information about EPC. ESCOs are trying to sell the idea to these organizations, but having CEO's involvement would be invaluable.

3.4 Resorts

Company	Details
Resort 1 (Lodging) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☑ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business operates resort lodging time-share facilities in the central Colorado Rocky Mountains. Their buildings are lightly cooled and have large winter heating loads to provide comfort to the condominiums and guest amenities throughout their campus. Having a property management company which involves a Homeowners Association (HOA) in the program has been an incredible learning opportunity. Slow progress at the beginning of the project gave way to an extremely vetted EPC contract process by staff and the HOA board members. Relationship building between the ESCO and HOA was critical to the success of the TEA and consideration of an EPC. The ESCO took extra care to manage this participant to a successful outcome even with substantial delays in moving forward throughout the two-year project development timeline. The primary lesson learned with this business is that HOAs and property management companies are participants that need a lot of care and attention from their ESCO. They have great diversity regarding the decision-makers who need to be satisfied. Another important lesson learned was that this business found the CEO's EPC contract template to be extremely long and arduous to execute and they would have preferred a pared down, scope of work-style contract with separate terms and conditions (generally this allows the business to state their own standard T&Cs which speeds contract execution).
Resort 2 (Ski Operation) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed	This business operates facilities for a ski resort in the central Colorado Rocky Mountains. Their facilities include large ski lift and pumping operations for snow making. Pumping services were the initial focus of the project, but eventually the guest pool and fitness building became the focus of this project due to budgetary constraints. That facility includes a mix of locker rooms, recreation spaces, fitness rooms, offices, and the pool area. Although this project spanned two years, it was only with the recent shortened deadline for completion of the TEA that the project really

☐ Self-Implement ☐ No Action	moved forward. The national decision-making structure of this company also made it difficult for this regional facility to gain project approval above other proposed projects. The company as a whole has a robust sustainability program, but allocating funds to support the TEA for this site was an arduous process. Additionally, the process of applying to receive federal funds and registering for a DUNS and SAMS number slowed the project tremendously. The company had to consider whether such registration and agreements were going to impact other portions of their business, which would have derailed the project entirely. Now that they have completed a TEA with their ESCO, they have an attractive project to consider for EPC implementation. The lessons learned are that this large national company had to legally consider the implications of SAMS and DUNS number registration prior to signing up. Furthermore, having a parent company involved in local decision-making substantially slowed project progress as in many other projects.
Resort 3 (Ski Operation) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☑ Self-Implement ☐ No Action	This business operates facilities for a ski resort in the central Colorado Rockies. Their facilities include large ski lift and pumping operations covering the ski mountain. These pumping services support snow making and are a critical component of serving their guests, but also consume a substantial amount of energy. While this company was actively engaged early on in the introduction phase of the program, the TEA process was not typical, as they started with a focus on compressed air systems at the resort and eventually did a snow-making (pumping) study. Their ESCO was very accommodating regarding their continued expansion and refocusing of TEA efforts. However, the project illustrated the difficulty in having the local resort fund projects, while the national office only would realize any operational budget savings after a three-year period. The primary lesson learned at this site is that parent company/local facility relationships can either hinder or bolster project implementation. In this case, there was no incentive for the individual resort to implement the project externally through an ESCO. Another important lesson learned was that this business found the CEO's EPC contract template to be very long and arduous to execute. They would have preferred a pared down, scope of work-style contract with separate terms and conditions (generally this allows the business to state their own standard T&Cs, which speeds contract execution).

3.5 Commercial Property

Company	Details
Property Management 1 (Apartments) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business manages commercial multi-tenant properties. These facilities primarily serve as apartment housing with some hallway space and laundry facilities within them. This project came into the program during the last six-month period when timing of TEA execution became critical. As a result, the ESCO moved the TEA forward succinctly without the standard milestone meeting approach to keeping the CEO consultant and client in the loop. Instead, the ESCO worked closely with the participant to gather the necessary information and develop the TEA throughout the six-month period. The fact that the business went from project introduction through to a draft TEA in the three-and-a-half month time frame is rather incredible. At a follow-up meeting in October, 2014, the participant updated the pilot program team regarding its consideration of EPC. Due to cash flow concerns, the organization had to take some immediate actions regarding existing contracts and services to generate available funding to pay for the capital improvements noted in the TEA. Management clearly understood before engaging in the EPC process that their equipment was more than 30 years old and would require a substantial financial commitment to bring things up to date. They were extremely impressed with the detail provided in their TEA and have rearranged their budget to generate a pool of $60,000 to $80,000 every year for the upcoming three to five years to make these retrofits take place on a phased basis. The primary lesson learned in this project is that a succinct six-month bi-annual application and TEA execution process drives TEA progress and keeps the company clearly focused on assessing the facilities and considering implementation through EPC.
Property Management 2 (Apartments) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement	This business manages commercial multi-tenant properties. These facilities primarily serve as apartment housing with some hallway space and laundry facilities within them. This project moved forward slowly at first due to consideration of the application process for federal funding. Once an executed TEA buy-down purchase order was in place, the company and ESCO moved forward quickly with the development of a comprehensive TEA for a group of their managed properties. However, the consideration of larger capital improvements led the business to revert to a line-item payback for the project. One of the primary benefits of the EPC approach is bundling measures to get a larger scope of work completed. Line-item payback

☐ No Action	consideration defeats the purpose of conducting a comprehensive retrofit. The project did, however, recover from a long delay in considering implementation and is on track to move forward with review and execution of an EPC contract in 2015. The lesson learned from this project is that line-item consideration of measures is a misinterpretation of the intent of the EPC process that can halt projects. This was a common theme amongst a number of projects.
Property Management 3 (Apartments) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☑ Self-Implement ☐ No Action	This business manages commercial multi-tenant properties. These facilities primarily serve as apartment housing with some hallway space and laundry facilities within them. This project was an excellent opportunity to observe the unique lessons that can be learned from multi-tenant commercial property ownerships. Initially the project moved slowly through the process of executing the purchase order, due to their Section-8 housing status. However, the TEA phase moved quickly and provided a comprehensive list of measures to the company owner. Ultimately, property management is a very time-consuming and project intensive field with facility concerns that constantly need attention. The project has decided not to move forward via EPC with their ESCO, but instead to self-implement the low cost, short payback measures identified in the TEA with their internal staff. The lesson learned from this project is that owners who engage in a constant process of executing small projects when budget is available are a poor fit for EPC. This mentality of breaking up the project into pieces is poorly suited for EPC as a tool for implementation.
Property Management 4 (Commercial Property) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business owns and manages commercial office space with multiple office tenants per site. The air distribution system has undergone numerous tenant modifications over its years of operation. This project was streamlined with a defined TEA deadline that moved the project through the TEA phase with no delays. This participant is a very cutting edge property management company focused on attaching as much value to a property as possible (i.e., renovating the building systems with a loan guaranteed through savings that stays with the property). Their interest in casting as wide a net as possible and relying on their ESCO's expertise led them to an excellent TEA report that they currently are considering for EPC implementation. A valuable lesson learned by including this business in the program is that the value statement of investment in building systems needs to be made and clearly defined as something that remains with the piece of commercial property. Otherwise, many such management firms may stay in a cycle of gathering the low-cost measures because they are uncertain about how long they will hold the property in their portfolios. Future

	Commercial Property Assessed Clean Energy (CPACE) programs would be very attractive to this kind of participant.
Property Management 5 (Commercial Property) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business owns and manages commercial office space with multiple tenants per site. The facility involved in the program primarily serves business office space, and the air distribution system has undergone numerous tenant modifications over years of operation. Although the involvement with this project did not proceed past the introduction phase (including an in-person EPC introduction presentation), many valuable lessons were garnered from interacting with them. They have some major equipment coming up for repairs at some of their facilities. Because of their ownership and construction requirements, there would be many internal processes to navigate in order to initiate a project. These kinds of process hurdles are encountered in the public sector, but this project proves that this can occur in the private sector as well. One lesson learned from this project is that when a participant has ROI requirements less than a five-year payback, it is very difficult to move forward with EPC, because of the large capital measures they needed to complete (i.e., air handling unit large scale repair/replacements, chiller plant retrofit, etc.).
Property Management 6 (Commercial Property) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This business owns and manages commercial office space with multiple tenants per site. The facility involved in the program serves business office space primarily and the air distribution system undergoes numerous tenant modifications over years of operation. Throughout the introduction and process of generating the TEA draft report, the property asset manager for this business was very focused on the collaboration between their ESCO and facilities maintenance contractor. This can be a beneficial component of an integrated EPC process. However, this existing third-party maintenance contractor relationship demonstrated how difficult it can be for an ESCO to show an implementation value to a participant when a third-party maintenance contract is already in place. The staff at this facility currently is considering their TEA report for implementation, but also is concerned about the term of hold that they will have with the property. This firm is not interested in a Commercial Property Assessed Clean Energy (CPACE)-type financing that stays with the property, and would rather focus on increasing the tenancy and fixing up the facility to make it attractive for potential buyers. The primary lesson learned at this project was that term of hold makes a tremendous difference in whether EPC is an option for a business. Additionally, the perception of ESCOs threatening the work of third-party

	maintenance companies is a large hurdle in the EPC process. Care needs to be taken in the early stages of the project to ensure that the maintenance firm understands the EPC process. The process dovetails with the work they are doing, and supports retrofits being conducted in the building to make the systems more maintainable (i.e., not having to spend time searching for a part for an old unit that no longer is manufactured).

3.6 Miscellaneous (Individual Sector noted in Parenthesis)

Company	Details
(Communication Station) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This project came into the pilot program within its last six months of enrollment and has progressed much faster than some of the older projects in the program. This rapid progression primarily is due to the way the CEO's succinct and streamlined purchase order process went for them, and their drive to move through the TEA phase within six months. This allowed this project to receive the TEA buy-down funding. They have received a comprehensive TEA report from their ESCO and are currently in the process of vetting what measures will make up their three-phase EPC project. A follow-up meeting in September, 2014, illustrated that this participant's 30-year relationship with a mechanical service company had caused additional considerations for the TEA. The ESCO had engaged the service company to provide critical design criteria around which the ESCO could build calculation assumptions. However, when the service company reviewed the TEA, they reconsidered some of the design constraints and the idea of reducing the redundant cooling of certain spaces after further discussion with the participant. It is understandable that a mechanical service company would have concerns about very finely tuned controls, potentially "hunting" for setpoints which cause valves, dampers, and actuators to be in constant motion instead of putting the building in a steady state. The ESCO agreed with this, but it is clear that continual updates to the mechanical contractor's design requirements would make it difficult for the ESCO to serve the participant. This is an area where a future program needs to ensure that mechanical contractors are informed through an updated EPC introduction presentation about the importance of demonstrating clarity around the current process and priorities in building operation when communicating with the ESCO. A primary lesson learned from this organization is that having a six-month deadline for TEA completion in order to receive the buy-down dollars had a profound effect on the timeliness of moving forward. This lesson should be considered a necessary component of any future private EPC program. Additionally, third-party maintenance contractors need to be introduced to EPC with the participants.

(Banking) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☑ Self-Implement ☐ No Action	This project was one of the first to move through the TEA process, and demonstrated a clear focus on understanding the current status of a sampling of their facilities and determining the retrofit opportunities left. Throughout the TEA phase they were clear about having an aggregate payback on the project of less than seven years, which is what their ESCO delivered. Upon receipt of their TEA report they were extremely concerned about the long payback of individual measures and shifted their focus to a project that included only measures with a payback of less than seven years, rather than an aggregate payback of less than seven years. This shift gutted the bulk of the project and left them with a small scope that they decided they could implement on their own in phases.
(Warehouse) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	Although this campus is comprised of a warehouse facility and an office facility, the energy intensity of the site and inability of past energy audits to define a clear path for implementation made this participant particularly eager for EPC. Their TEA development was thorough and implementation-focused from the start. Although they considered adding fleet fuel to the scope of the energy utilities considered, they decided against it because it blurred the line between the budgets of these two facilities and the rest of their company. With the large amount of focus the organization has placed on the TEA buy-down, this project has gotten off-track numerous times. This illustrates the benefit of splitting project funding support between the TEA phase and the implementation phase to maintain participant focus on implementation.
(Community Center) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☐ EPC Under Consideration ☑ EPC Contract Executed ☐ Self-Implement ☐ No Action	This project was one of the earliest successes of the program and illustrates how an ESCO that focuses on the needs of the participant (in this case communicating the project to their large delegate decision-making body), can achieve great successes. Although the project development period was substantial, the ESCO did an excellent job of bringing this project team and the delegate body (of more than 100 members) through the consideration of a TEA and eventually into an EPC contract. Recommended measures have been constructed at this point. The board of delegates created a very dense decision-making committee for this organization, which made the EPC process more arduous, although more comprehensive. Ensuring that ESCOs understand participant organizational structure is a valuable lesson learned for the program.
(Skating Rink) ☑ Introduction ☐ TEA Contract ☐ TEA Report	This project became involved in the program mid-stream and went through EPC introduction discussions. It also was brought into the program by another third-party energy consulting engineering firm. This third-party firm made communication with the business very difficult. They insisted on being in the middle of communication at first. The project would have been

☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	extremely complex due to the year-round refrigeration loads serving their facility processes, which intrigued potential ESCOs as well as CEO program management. After long delays in responsiveness from the business during the introduction phase, they determined not to move forward with a TEA at this time because they are in recovery mode after a flood damaged some of their major equipment. This project illustrates the lesson learned that having a third party act as a go-between and not part of the project team creates a large amount of confusion and takes away from the focus on project implementation.
(Car Dealership) ☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	Small businesses are a tough niche for performance contracting to effectively serve. The difficulty stems from low utility costs and the fact that smaller businesses have demonstrated (in this case) a disinterest in long contracts and extensive processes. Meanwhile, it has been our experience that thorough contract templates, and rigorous TEA and third-party reviews ensure that the customer is getting the "Guaranteed Savings" that are the backbone of Performance Contracting. Furthermore, this highlights the great value pre-qualified ESCOs bring to the agencies they serve because they can provide comprehensive services. The lesson learned is that the participant contact displayed an impatience regarding the use of a thorough energy audit and felt that he already knew where the opportunity was. Vetting potential program participants for their interest in a comprehensive process like EPC up front is extremely critical.
(Private School) ☑ Introduction ☑ TEA Contract ☑ TEA Report ☑ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	This is an educational organization that was extremely intrigued by the opportunity to generate an implementable project through the TEA and EPC processes. Their facilities have been updated sporadically over the years, and the remaining updates centered on the operation of their primary airside systems and comfort throughout the facilities. Their ESCO continually communicated with the organization as they discovered capital intensive retrofits that needed to take place. The company was responsive to the ESCO's input. The intent of the TEA process was to have hard answers to the problems in the facility, as well as costs/savings/paybacks to consider for implementation, regardless of the length of the payback period. A lesson learned from this project is that TEAs that come back with long payback items are not a failure of the EPC process, but rather an illustration of the extremely valuable design-level consideration to truly fix the problems in the building. The CEO staff should disseminate the value of comprehensive retrofits that blend long paybacks with short paybacks throughout program documentation to ensure continued support of this kind of in-depth work.
(Oil & Gas Production)	Although this project was primarily involved in the introduction phase of the program, the participant's consideration of the TEA process included

☑ Introduction ☐ TEA Contract ☐ TEA Report ☐ EPC Under Consideration ☐ EPC Contract Executed ☐ Self-Implement ☐ No Action	reviewing the template documents provided by the CEO and holding internal organizational discussions regarding how the EPC process could work. Eventually the project was determined not to be feasible at this time, due to restructuring of the business unit and uncertainty regarding further investment in this particular facility. The primary lesson learned from this project is that the open enrollment nature of the TEA buy-down process did not initially support the project driving forward when the support was in place for project consideration. Additionally, this project was not brought in by an ESCO, and illustrates that companies that have not been thoroughly involved with an ESCO stand less of a chance to move forward.

4 LESSONS LEARNED SUMMARY

The previous section contains in-depth descriptions of all projects involved in the program since program launch. The core lessons learned are summarized as follows:

4.1 Program Design Lessons (for consideration as prerequisites for future participation)

- A seasonal application approach to program participation, TEA generation, and TEA buy-down funding is more effective at ensuring that projects go through the TEA phase than an open enrollment program.
- The program's lack of pared down, "business friendly" revised TEA (or investment grade audit) and EPC contracts slowed a number of projects. These contracts should be considered for update in the future.
- The TEA purchase order process was a large hurdle for many businesses because it required significant coordination to execute. The process of applying to receive federal funds and registering for a DUNS and SAMS number raises the question of the impact such registration may have on other portions of the business.
- Clear program marketing to the ESCOs involved in the CEO's program is extremely important. Many of the ESCOs made comments throughout the different projects that the developmental nature of this pilot program has led to clearer marketing of the Private Sector EPC services available.
- Splitting the program funding incentive from its current TEA buy-down to a partial TEA buy-down and then a partial project construction buy-down (or an implementation focused incentive) would encourage companies to fully consider implementation as the ultimate goal of the EPC process.

4.2 Meeting the Needs of Business Participant Lessons

- Term of property hold for commercial and apartment property management companies is extremely important and may require a Commercial Property Assessed Clean Energy (CPACE) program to overcome.
- ROI or payback requirements of less than five years make it extremely difficult for ESCOs to deliver a project. Companies cannot interpret recommended measures on a line-item payback basis. This will cause the participant to become either a phased internal project or no project at all.
- The participant's perception of financing options is a critical factor that needs to be fully understood in the early stages of project development. Businesses need to be vetted to ensure that either the TEA process will deliver them a draft TEA in time for annual budgeting inclusion, or that the business is truly committed to third-party financing of the project or CPACE.
- Smaller branches of a larger national corporation are going to experience substantial internal approval processes which may slow a project or keep it from taking place.
- The perception third-party maintenance companies have of the way ESCOs will tie in with their work as a service provider to the participant is a large hurdle in the EPC process.

5 MAJOR MARKET BARRIER SUMMARY

The aggregated lessons learned from this program illustrated some valid market barriers that need to be overcome for widespread private EPC adoption. Table 2 below illustrates that all of the projects involved in the program experienced each of the listed market barriers from the program consultant's subjective view, based on close involvement with these projects over the three-and-a-quarter-year period.

Table 2 – Market Barriers by Project

	Market Barrier (0 = did not impact project 1-4 small to large impact)			
Industry	**Need for Short Payback**	**Internal Financing & Project Phasing**	**Large Decision-Making Structure**	**Need for "Business Friendly" Contracts**
Office 1	0	2	4	3
Office 2 - Non-Profit	0	4	3	0
Office 3 - High Tech Training Facility	3	2	4	1
Medical 1 - Assisted Living	0	0	0	0
Medical 2 - Assisted Living	0	0	0	0
Medical 3 - Hospital	1	4	3	2
Medical 4 - Hospital	4	0	0	0
Manufacturing 1	4	0	3	2
Manufacturing 2	1	2	3	4
Manufacturing 3	1	4	2	3
Resort 1 - Lodging	2	1	4	3
Resort 2 - Ski Operation	1	2	4	3
Resort 3 - Ski Operation	4	3	1	2
Property Management 1 - Apartments	3	4	0	2
Property Management 2 - Apartments	4	2	3	0
Property Management 3 - Apartments	3	4	0	2
Property Management 4 - Commercial Property	3	2	4	0
Property Management 5 - Commercial Property	4	3	1	2
Property Management 6 - Commercial Property	3	4	0	2
Misc - Communication Station	1	4	2	3
Misc - Banking	4	3	0	2
Misc - Warehouse	3	2	1	4
Misc - Community Center	2	3	4	1
Misc - Skating Rink	0	0	0	4
Misc - Car Dealership	0	0	0	4
Misc - School	0	4	0	3
Misc - Oil and Gas Production	2	4	3	1
TOTALS	2.7	3.0	2.9	2.5

5.1 Need for Short Payback

Prior to project kick-off, CEO conducted surveys in which ESCOs indicated that the need for short payback was the primary reason the private sector did not engage in EPC. Pilot program experience suggests that although short payback is an important factor, it is not the only factor. Short payback is important to certain businesses or certain sectors, but others are not as concerned with payback as they are confused about how to finance the project or get through their internal decision-making process and hierarchy. Most projects started with a discussion of payback, but generally the participants were willing to consider longer payback horizons when their ESCO described the capital improvement value of the project. It is important that CEO consider how applicants can be vetted to ensure that short payback is not a barrier to project implementation.

Role of Colorado Energy Office	Incorporate participant considerations and lessons learned from the program into the Introduction phase support for private sector participants. Ensure that a future program vets the characteristics of an organization before supporting their consideration of the EPC process.

5.2 Internal Financing vs. Traditional Third-Party Financing

Initially the project team theorized that greater access to capital in the private sector would impel participants to convert technical energy audits into energy performance contracts. Even though project participants expressed interest in investigating third-party financing, nearly every participant reverted back to internally financing the project when the TEA phase came to a close.

The challenge is that internal capital typically is available only in phases over multiple years for large capital projects. Such a phased approach delays project implementation (and energy savings) and minimizes the benefit of bundling measures with varied paybacks to gain an acceptable overall project payback. This causes many of the most impactful capital measures to fall off the list.

Prior to applying to the EPC Program, companies should give additional consideration to whether they will or will not internally finance projects, and whether they are committed to third-party financing. This consideration is critical to avoid missing the annual budget cycle when timing delivery of the final TEA.

Additionally, Commercial Property-Assessed Clean Energy (CPACE) programs may be able to play a role in providing a financing alternative that is off the balance sheet, which is attractive to businesses. This option holds tremendous potential in ESCO eyes. They look forward to hearing what the final Colorado CPACE program entails when it is launched in early 2015.

Role of Colorado Energy Office	Maintain open communication with CPACE program administrators. Ensure that, if internal financing will be used for project implementation, the budgets and approval process are transparent early in project development.

5.3 Large Decision-Making Structure

Public sector EPC clients have fairly consistent local decision-making hierarchies (councils or boards, depending on the type of jurisdiction), which aids ESCOs in readily serving those markets.

Numerous private sector projects illustrated how dense corporate decision-making processes can be for larger companies. The further removed the decision-makers are from the facilities impacted, the longer it takes to approve an energy audit or project implementation. Projects could not gain approvals within the business unit and often were held at the mercy of global or national corporate decision-makers. It is a dense decision matrix difficult for any ESCO to navigate without first having established the relationship at a global or national level.

Role of Colorado Energy Office	Ensure that a future program closely vets the characteristics of an organization in Step1: Introduction before supporting their consideration of the EPC process.

5.4 Need for "Business Friendly" Contracts

Participating companies and their ESCOs stated that Colorado's standardized public sector EPC program contracts don't match up well with the types of contracts that are more familiar to these businesses (e.g., Scopes of Work and Terms & Conditions). While their level of detail is extremely beneficial in the case of public sector agencies, private sector businesses will have a lengthy review process, due to the multitude of contractual relationships they must balance simultaneously. The CEO should consider optional pared-down contract documents that are more readily accessible to businesses. While the CEO should maintain the recommendation to keep most of the sections included (due to their excellent coverage of EPC implementation), it must consider how it can allow businesses to choose which components they would like to incorporate into their contract.

Role of Colorado Energy Office	Continue working with professional organizations (such as BOMA) to develop contract documents which are more functional for businesses, but also maintain program best practices in contract documentation.

6 MARKET BENEFIT SUMMARY

6.1 Deeper Retrofits

Given that most private sector EPC projects nationally have focused on lighting retrofits alone, the Colorado project team was delighted to see that deeper retrofits were proposed for project participants than anticipated. Colorado's pre-qualification process demands a depth and breadth of services from each ESCO working in the public sector, yet the project team saw even more comprehensive technical energy audits and project proposals for technically sophisticated and demanding private sector participants. Process efficiency opportunities and in-depth controls retrofits were combined with capital-intensive boiler and chiller retrofits. The retrofits often considered complex application of heat rejection and potential ancillary uses which would save energy and reduce operating expenses.

Deep retrofits have been the goal of many national organizations serving businesses, however achieving these kinds of retrofits is a difficult task. The fact that the private EPC pilot program was able to see such diversity in the measures considered and implemented by participants is extraordinary. This illustrates a national example of how deeper retrofits can be considered.

Role of Colorado Energy Office	Continue to support businesses in consideration of more comprehensive EPC projects, and ensure that they do not become focused on low hanging fruit alone.

6.2 Case Studies for the Private Sector

While many in the ESCO community have concerns about the viability of serving private sector clients via EPC, the majority of the non-participant ESCOs still are eager to see the results of the pilot program. The private sector program can act as a case study for other businesses to see and gain motivation from, which is an incredible benefit for this market. This allows business decision-makers to feel more comfortable because peers in their market have been able to successfully consider a TEA and implement the recommended retrofits.

Role of Colorado Energy Office	Disseminate the findings of this report and project case studies to ESCOs, businesses, and professional organizations (such as BOMA).

6.3 Piloting the EPC Process for National Adoption

This pilot program acted as a proof of concept for many of the companies involved. They hope to replicate this process at their other facilities in the state or nationwide. This interest in testing out EPC as a viable private sector tool for facility improvements illustrates the need for audit processes that directly lead to implementable projects throughout the private sector.

Role of Colorado Energy Office	Take the findings of this pilot program and incorporate them into a future private EPC program. Share lessons learned with other SEOs.

6.4 Understanding the Cost of Deferred Project Implementation

Through conducting follow-up interviews with participants who chose to "self-implement" their project, **it was found that they had implemented 0% of the measures proposed by their ESCO one year later.** They had implemented some work on their facilities, but that work was limited to short payback (less than three years) LED retrofit opportunities which weren't part of their TEA scope.

Meanwhile interviews with the projects that moved forward with an EPC contract and construction during the program period have **revealed implementation of 62%, 73% and 100% of their measures.** Measures implemented for these businesses were not limited to lighting retrofits, but included:

- Boiler replacement for space heating, snowmelt, and domestic hot water applications
- Exterior lighting retrofit
- Hot water piping insulation
- Building automation system installation and controls sequence upgrades
- Supplemental space heating upgrades
- Demand management strategies
- Process ventilation optimization
- Compressed air system optimization and leak reduction
- Occupancy sensor controls on lighting equipment
- Daylighting controls
- Gas oven process heating optimization
- Ventilation optimization for mechanical room
- Chiller upgrades
- Air handling unit upgrades
- Installation of thermal equalizers
- Pumping flow optimization
- Water efficiency retrofits

Role of Colorado Energy Office	Use case study language and program marketing and outreach to convey this message regarding the reality of self-implementation. Ensure that the Introduction phase is focused around comprehensive project implementation and that the participant truly understands this point.

6.5 Understanding the Critical Phases for Private EPC

While the public sector requires a substantial amount of program support through Step 2: Secondary ESCO Selection phase, the private sector illustrated the need for more involved Step 1: Introduction and the EPC decision phase support.

Step1: Introduction generally took longer due to an increased number of meetings discussing EPC with key decision-makers. Since the private sector is a new market, it is understandable that it will take more time to inform businesses about the EPC process and its value.

The EPC decision phase generally took much longer since some implementation drivers did not apply to the extent they do in the public sector. For example, public sector funding constraints often mean a project cannot occur without the third- party financing offered by executing an EPC contract. However, this is less of a factor in the private sector. The public sector benefits from the financier offering the rate lock for only a short period, which drives decision making.

Role of Colorado Energy Office	Ensure that SEO program consultants are aware of the added emphasis on these phases of the project. Develop more robust program documentation to drive home the benefits of the EPC process and expedite phase transitions.

6.6 Illustrating Need for Maintenance Plan

A number of the participants learned through the TEA process whether their current maintenance and capital budget processes were sufficient. In one case, the TEA illustrated how far behind they were on maintaining the majority of their systems. This prompted the client to reevaluate its annual operating budget and find ways to carve out an annual maintenance and replacement budget that would keep this from happening in the future. This kind of maintenance plan evaluation was valuable for businesses to confirm what they were doing well and realize where they needed to improve.

Role of Colorado Energy Office	During the Introduction phase, determine whether this kind of evaluation is valuable to the participant. If so, ensure that the ESCO provides this kind of discussion (or illustration of gaps in existing plan) in the TEA report.

6.7 Better Understanding of Participant Characteristics for Private EPC

Throughout the program, it became obvious that there were certain characteristics which make a particular company a poor fit for EPC. One important characteristic to recognize is a company focus on the least amount of investment to get the highest return. This type of business will need to undergo a large shift in thinking in order to appreciate the findings of a TEA and a comprehensive project proposal. Realizing this up front, and focusing program efforts on talking through the bundled approach of EPC in greater detail, will help vet participants and better serve program success.

Some key considerations for vetting private sector participants are as follows:

- Does the participant contact have a clear understanding of the internal decision-making process, and can they illustrate critical timelines and deliverables to the Colorado Energy Office (SEO) or ESCO up front?
- If the company contact is part of a green team or sustainability task force, do they know what budget they can utilize to implement the project and what the realistic project phase amounts are?
- Can the company contact bring actual on-site facilities staff, finance staff, and decision-makers to the EPC introduction presentation and keep them engaged in the process?
- Is the company truly comfortable with a design-build process, or will they want to revert back to a design-bid-build method of implementation?
- Does the company have the bandwidth to support a comprehensive retrofit project?

- Does the company have an existing service contractor that needs to be involved in the process? If so, determine how that company will support the EPC process.
- Can the company demonstrate how internal decision-makers will evaluate the project as a whole and not pick out the low hanging fruit for implementation?

Role of Colorado Energy Office	Incorporate participant considerations and lessons learned from the program into the Introduction phase support for private sector participants. Ensure that a future program closely vets the characteristics of an organization before supporting their consideration of the EPC process.

6.8 Limitations in Program Success Dissemination

While the public sector has spent years networking with peers and sharing information regarding the success of EPC in their facilities, this kind of discussion has proven less likely to occur in the private sector. Businesses are less likely to share details regarding a process which has benefitted them, for competitive reasons. Furthermore, businesses have a greater diversity of professional organizations which will need to be informed regarding the EPC process. Understanding this need for marketing and program success story dissemination throughout the business community is critical to launching a future program.

It can be difficult for ESCOs to directly engage these organizations due to the fact that it looks like a solicitation. SEOs are uniquely positioned to engage with professional organizations to provide an unbiased perspective regarding EPC and describe what resources are available.

Role of Colorado Energy Office	Ensure that the SEO actively markets the program and successful projects to professional organizations statewide. This will ensure that the SEO is serving this critical market need since the ESCO community has not been able to engage with these organizations in the past.

6.9 Comparison to Existing TEA Rebate Opportunities

The level of TEA buy-down funding offered by this pilot program mirrored an offering that had been available through a local utility in the State of Colorado for years. While the utility rebate program found low participation rates and eventually was removed as an offering, the Private EPC program saw tremendous uptake of the TEA buy-down funding. This illustrates how impactful the Colorado Energy Office connection to the ESCO community can be in engagement with businesses and in their applying for such funding opportunities. The requirements of the TEA buy-down program were more acceptable to businesses than the past utility rebate program, even after considering reporting and other requirements which accompanied the DOE funding offered through this program. Payment of the TEA buy-downs also occurred in less time than payment of the utility rebates, though participant suggestions suggested that the payment process could be further expedited.

Role of Colorado Energy Office	Engage with utilities to ensure they understand EPC nuances of and offer rebates that drive implementation.

6.10 Discerning how Private Sector EPC Drivers Differ from the Public Sector

Throughout the pilot program, the participant projects have illustrated many differences from the public sector in what drives them to consider EPC. The public sector is generally driven to consider EPC for the following reasons:

- Capital budget requests denied for many years leave no other alternative to implement the necessary retrofits.
- Equipment is far beyond the equipment service life, and parts are beginning to fail that cannot be replaced.
- Recent system failures have forced the agency to incur unexpected expenses which force consideration of a more proactive facility maintenance strategy.
- Critical comfort concerns are not able to be resolved by current facilities staff.
- Facilities are expected to be used by occupants for the foreseeable future (15-20 years), which makes long payback bundled projects acceptable.

The private sector is not driven by a lack of capital to make retrofits when necessary, so they generally do not suffer from equipment that is long past expected replacement. This factor, combined with the availability of capital to fund projects, leads them to a different set of drivers:

- Capital budget requests have been met for short payback (low hanging fruit) measures, but larger capital retrofits still have not been addressed. The EPC process creates a contractual obligation to implement the full scope of measures today as opposed to putting things off until tomorrow.
- Mechanical service providers are able to keep older systems running due to continual maintenance contracts, but may not be able to resolve long-standing comfort or utility expense concerns of the private sector participant.
- Facilities are held for a shorter term (five to seven years), since uncertainty in future business profitability may lead to shifting priorities for capital dollars. This drives private sector participants to have a greater interest in CPACE as a means of associating the cost of the retrofits with the buildings, themselves.
- Facilities staff at the business are capable and know a lot of the problems in the building that need to be addressed, but simply do not have the bandwidth to take on evaluation and implementation of large scale projects.
- Green/sustainability teams within the organization are driving consideration of energy consumption, but need a third-party provider (ESCO) to actually conduct facility retrofits.

Role of Colorado Energy Office	Ensure that a future program understands private sector drivers and isn't simply repackaging public sector programs to serve the private sector. Program documentation and presentations should illustrate these drivers and ensure that discussion regarding these topics is present during the Introduction phase.

7 CONSIDERATIONS FOR PERMANENT PROGRAM DESIGN

7.1 Update Program Process

Tuning the CEO's existing program processes and documentation to more succinctly communicate frequently asked questions for private sector participants would facilitate more discussion early in the introductory phase. These discussions can encourage projects to consider key factors such as third-party financing, internal financing, and CPACE. Additionally, having updated introduction documents for certain market sectors, such as commercial property management, would be beneficial. Writing discussion topics and solutions to different lease terms and ownership hold period concerns would be an excellent step to help resolve some of the barriers experienced during the pilot phase of the program.

7.2 Update Program Contracts

Pilot program participants illustrated a need in the CEO's EPC process to consider comprehensively updating the TEA and EPC contract documents to pare them down to scope of work contracts with business provided terms and conditions. For most private sector participants, their internal decision making stifles projects, especially when it comes to contract review and acceptance. Creating contract template documents that operate more as Scope of Work documents to be attached to existing contract templates of the business would save a significant amount of time in approval processes. The CEO must consider how it will maintain important components of the existing contracts (which safeguard the ESCO and participant) while offering increased flexibility to the private sector.

7.3 Conversion Rate of Pilot Program Participants from TEA to EPC

Conversations with ESCOs and private sector participants revealed that there are four projects which decided to execute an EPC, three that are actively engaged in contracting for implementation, along with four more that are leaning that way in their decision making.

On the other hand, there are two projects that decided to self-implement and three more projects that are leaning towards not moving forward with an EPC. This information is based on conversations at the time of this report's finalization and can and will shift over time.

7.4 Establish a Long-Term Private Sector Energy Efficiency Program

Maintaining a long-term seasonal (six-month TEA cycle) program that is committed to furthering private sector EPC adoption would be an excellent first step to provide businesses in the state with the peace of mind that the CEO plans to support such projects on an ongoing basis.

Additionally, establishing this program hand-in-hand with organizations such as the Energy Services Coalition (ESC) would be an excellent way to garner the benefit of ESCO experience with private EPC while also introducing the broader EPC audience to the findings of this program.

APPENDIX B

SWEEP reports and Nexant ESCO interview summary

CEO contracted with the Southwest Energy Efficiency Project (SWEEP) to:

1. Identify and report on utility program offerings that potentially would support projects in an energy performance contracting program offering to the private sector.
2. Work with pilot program partners and other ESCOs and/or businesses with EPC experience to identify structural barriers to widespread implementation of EPC projects.

There are three SWEEP reports included in this appendix:

Report 1: Summary of Colorado utility programs
Report 2: Summary of ESCO surveys
Report 3: Summary of participating company perspectives regarding their EPC experience

Towards the end of the pilot program, Nexant interviewed three representatives of two ESCOs that did not have projects in the pilot program. Those interviews are summarized at the end of the appendix.

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

Report 1: Summary of Colorado utility offerings

March 2013

BACKGROUND

Energy Performance Contracting (EPC) is a financing method that gives organizations the opportunity to implement energy efficiency upgrades with no upfront costs, and often with a performance guarantee that ensures that the project's energy savings are sufficient to repay a capital lease or debt service. EPC is used widely by third-party energy service companies working primarily in the commercial sector.

EPC projects have been highly successful in Colorado's public sector, but have found less success in the private sector, as is the case across much of the country. A recent meta-study found that 85 percent of energy services company (ESCO) projects implemented between 1990 and 2008 were done in the public and institutional sectors (68 percent in the MUSH[1] market and an additional 17 percent in federal projects).[2]

The study also found that one of the key differences between public and private sector projects is in the structure of the ESCO contract. About 73 percent of the public/institutional sector projects used a performance-based contract, compared to only about 40-45 percent of the private sector projects. Guaranteed savings is the most popular type of performance-based contract in the public sector, but guaranteed savings structures are less utilized in the private sector. Shared savings contracts make up the majority of private sector transactions in the ESCO market. In most shared savings arrangements, the ESCO assumes the financing risk, compared to guaranteed savings contracts, where the customer typically finances the project, and the ESCO guarantees enough savings to cover the debt obligation.

The Colorado Energy Office (CEO) has received a grant award from the U.S. Department of Energy to introduce facility owners in the private sector to the EPC process, and to encourage businesses to meet ambitious energy savings goals through the use of an EPC model, which enables a comprehensive, packaged approach to achieving deep energy savings. The CEO will provide up to 75 percent of the costs of an investment-grade technical energy audit (with a cap of $25,000), if the business completes the recommended work. Currently, CEO's program has 12 projects that have been completed or are active in the performance contracting process.

The Southwest Energy Efficiency Project (SWEEP) is supporting the CEO by researching market barriers that prevent widespread adoption of EPC within the private sector, and highlighting potential solutions to overcome these barriers. This report will identify, review and report on all statewide utility offerings that have the potential to support a private sector EPC program.

[1] Municipal and state governments, universities and colleges, K-12 schools, and hospitals.
[2] "Evolution of the U.S. energy service company industry: Market size and project performance from 1990-2008," Larsen, P., Goldman, C. and Satchwell, A. Energy Policy 50 (2012) 802-820, 2012.

SIZE OF COLORADO UTILITIES

While there are 60 electric utilities in Colorado, a small number of utilities account for most of the energy sales in the state. Tables 1, 2 and 3 list the largest utilities in the commercial, industrial and all sectors, respectively.[3] For each table, the listed utilities account for at least 80 percent of total Colorado retail sales in that category (in MWh).

Table 1. Colorado Utilities, Commercial Sector, 2011

Rank	Entity	Class of Ownership	Number of Consumers	Sales (MWh)	% of Statewide Sales[4]
1	Public Service Co of Colorado	Investor Owned	209,221	12,841,552	64.6%
2	City of Colorado Springs - (CO)	Public	22,276	1,083,036	5.4%
3	Black Hills/Colorado Elec.Util	Investor Owned	11,707	855,668	4.3%
4	Intermountain Rural Elec. Assn	Cooperative	11,935	604,186	3.0%
5	Holy Cross Electric Assn, Inc	Cooperative	9,569	531,506	2.7%
6	City of Fort Collins - (CO)	Public	7,560	502,176	2.5%

Table 2. Colorado Utilities, Industrial Sector, 2011

Rank	Entity	Class of Ownership	Number of Consumers	Sales (MWh)	% of Statewide Sales
1	Public Service Co of Colorado	Investor Owned	328	6,444,761	42.9%
2	City of Colorado Springs - (CO)	Public	1,393	1,978,947	13.2%
3	White River Electric Assn, Inc	Cooperative	63	956,311	6.4%
4	La Plata Electric Assn, Inc	Cooperative	189	501,119	3.3%
5	Moon Lake Electric Assn Inc	Cooperative	11	480,776	3.2%
6	Empire Electric Assn, Inc	Cooperative	210	478,172	3.2%
7	Poudre Valley R E A, Inc	Cooperative	983	455,726	3.0%
8	City of Fort Collins - (CO)	Public	16	451,083	3.0%

[3] Source: U.S. Energy Information Administration. Data available at: http://www.eia.gov/electricity/data.cfm#sales

[4] Represents the percentage of statewide sales to that sector by the utilities listed.

Table 3. Colorado Utilities, All Sectors, 2011					
Rank	Entity	Class of Ownership	Number of Consumers	Sales (MWh)	% of Statewide Sales
1	Public Service Co of Colorado	Investor Owned	1,372,891	28,485,784	53.5%
2	City of Colorado Springs - (CO)	Public	211,188	4,545,889	8.5%
3	Intermountain Rural Elec. Assn	Cooperative	140,787	2,149,730	4.0%
4	Black Hills/Colorado Elec.Util	Investor Owned	93,722	1,852,856	3.5%
5	City of Fort Collins - (CO)	Public	66,220	1,446,604	2.7%
6	United Power, Inc	Cooperative	68,708	1,318,971	2.5%
7	Holy Cross Electric Assn, Inc	Cooperative	54,658	1,199,593	2.3%
8	Poudre Valley R E A, Inc	Cooperative	35,377	1,066,572	2.0%
9	La Plata Electric Assn, Inc	Cooperative	40,310	1,054,121	2.0%

UTILITY PROGRAMS THAT SUPPORT ENERGY PERFORMANCE CONTRACTING

The following information is based on utility program plans and reports, and interviews with utility program managers conducted in March, 2013.

Xcel Energy (Public Service Company of Colorado)

Xcel Energy is the largest utility in Colorado, with 65 percent of commercial sales and 43 percent of industrial sales in the state (in MWh). The utility, which sells both electricity and gas, has a comprehensive portfolio of demand side management (DSM) programs for commercial and industrial customers.[5] In the utility's 2012-13 plan, business programs targeting electric DSM have a combined annual budget of $43 million and are projected to save 214 GWh and 38 MW of demand in 2013.

Prescriptive programs offer incentives with standardized applications and rebate rates, which are meant to create a streamlined customer participation experience, and include:

- Lighting efficiency
- Motor and drive efficiency
- Small business lighting
- Computer efficiency
- Cooling efficiency
- Heating efficiency

Custom programs offer customized solutions that usually require an individualized assessment (audit), engineering calculations to estimate the energy savings from installed measures, and some level of savings measurement and verification (M&V). Custom programs provide incentives per unit of demand or energy savings capped at 60 percent of the project cost in the case of the main custom efficiency program, and include:

[5] Xcel Energy, 2012/2013 Demand-Side Management Plan, Electric and Natural Gas, Docket No. 11A-631EG, February 2012. Available at: http://www.xcelenergy.com/staticfiles/xe/Marketing/Files/CO-DSM-2012-2013-Biennial-Plan-Rev.pdf

- Standard offer
- New construction
- Energy management systems
- Re-commissioning
- Process efficiency
- Data center efficiency
- Custom efficiency
- Compressed air efficiency (also provided prescriptive rebates)
- Self-directed custom efficiency
- Segment efficiency

One program, Standard Offer (SO), was designed to target the EPC market specifically. Unlike other business programs, the SO program provides incentives for technical energy audits, but also requires three years of post-installation M&V at the whole facility level. Xcel is planning to cancel the SO program in 2013, due to poor participation. In the last four years, 47 projects applied, but only six completed the whole process. The Standard Offer program's termination should not impede any EPC project, since Xcel's other programs can accommodate any DSM project, from single measures to comprehensive packaged projects.

There are no restrictions on any of Xcel's C&I programs with regard to energy performance contracting. Xcel does require pre-approval for all C&I projects. Without pre-approval, projects could be considered free riders, and the utility would not be able to claim the savings due to those projects. Custom projects must have an incremental payback of one year or longer, and all projects must pass a cost-effectiveness test.[6] Some types of projects are excluded from participating in Xcel's business programs: combined heat and power (CHP), cogeneration, or renewable energy systems.

Large customers, with annual use greater than 10 GWh and demand of at least 2 MW, are eligible for the Self-directed Custom Efficiency program. This program does not offer support for the technical energy audit (TEA), as currently is offered in the Standard Offer program, but the rebates are higher than Standard Offer rebates.

City of Colorado Springs

The City of Colorado Springs Utilities (CSU) runs the second largest electric utility in Colorado, and the largest public utility, with 5 percent of commercial sales and 13 percent of industrial sales in the state (MWh).

CSU has two main program types for businesses: prescriptive and peak demand.[7] The prescriptive programs offer standardized rebates for:

- Windows
- Lighting
- Electronically commutated motors

[6] Colorado law requires that utilities use the Modified Total Resource Cost Test (MTRC), where a test result of at least 1.0 means the net present value of the dollar savings from a project for the utility is at least as much as the total of utility and participant costs to install that project. Colorado modifies the test by adding 10 percent to the benefits to account for non-energy benefits.

[7] For more information on program rules and incentive levels, visit www.csu.org

- Synchronous belts and pulleys
- High efficiency air conditioners
- Evaporative cooling systems
- Package terminal air conditioners
- Occupancy sensors

The Peak Demand program focuses on achieving peak reduction during the hottest hours of the summer. Participants must demonstrate at least 20 kW in reduction from 3-6 p.m. during the summer peak period. The peak demand rebate is $400 per kW. The utility gives customers latitude in how they achieve those savings and accepts a wide range of measures, although most projects in the program are equipment changes, not process or control changes. Participants need to submit an M&V plan to show how they will demonstrate the reduction achieved by the project. Participants can get either a peak reduction or a prescriptive rebate, but not both, and they can choose which program on the basis of which offers the best rebate.

Customers are encouraged to contact the utility before doing anything significant to check on the availability of funding. Some programs have limits, and will pay any one customer no more than 50 percent of the available program budget, which does get depleted as the year goes on. To the knowledge of CSU's efficiency program manager, the utility has had a couple of EPC projects, but it doesn't track them in a systematic way.

Black Hills Energy

Black Hills Energy (BHE) is the third largest electric utility in the state in commercial sales, but has a very limited industrial base.[8] The BHE portfolio has the following C&I programs:

- Prescriptive C&I
- Custom C&I
- Self-direct program
- New construction
- Small business direct lighting

BHE has no exclusions on eligibility in any of its C&I programs. All equipment that does not qualify for a prescriptive rebate is eligible for a custom rebate. Custom projects must have an incremental payback of one year or longer, and a benefit-to-cost ratio of 1.0 or higher.[9] The Self-Direct program evaluates the costs and benefits of individual projects against program benchmarks and rebates are based on the level of cost-effectiveness. To be eligible, customers must have an aggregated peak load greater than 1 MW in any single month, and aggregated annual energy usage of at least 5,000 MWh. As in the Custom program, projects must have an incremental payback of 1 year or longer, and a societal benefit-to-cost ratio of at least 1.0. Self-direct rebates are reflected as a bill credit against the customer's monthly DSM surcharge until the total amount of the rebate has been recouped through bill credits.

[8] For more information, visit http://www.blackhillsenergy.com/services/dsm/
[9] As measured by the Modified Total Resource Cost test (MTRC).

City of Fort Collins Utilities

FCU is ranked sixth in commercial sales and eighth in industrial sales. The utility has a comprehensive set of programs to serve C&I customers:[10]

- Business efficiency assessments
- Business efficiency rebates
- Building tune-up
- Integrated design assistance
- Efficiency challenge

The Business Efficiency Rebates and Business Efficiency Assessments would be the main vehicles to serve the EPC market. FCU has no exclusions for EPC projects, and is neutral on how projects are financed. The utility does have a coordination challenge in combining rebate funds from its own budget with those of the Platte River Power Authority (PRPA). PRPA does not support incentives for very low payback measures (for example, some lighting measures have paybacks of one year or less). FCU is committed to creating a seamless process for its customers, and in the couple of cases where the issue has come up, FCU has made up any difference in incentive amounts out of its own budget. FCU and PRPA are in an ongoing discussion on this issue.

Holy Cross Electric Association

Holy Cross Electric Association (HCEA) ranks fifth among commercial energy users in the state, due to the presence of several large ski resorts and other recreational facilities in its territory. The utility just ramped up its DSM portfolio in September, 2012, and has a plan to serve all customer classes with efficiency programs.[11] The commercial program offers prescriptive incentives up to 1.5 cents per kWh saved over the life of the measure (up to 10 years). The utility also offers a custom program, which limits incentives to $20,000 per customer per year, or 5 percent of the previous year's revenue from that customer, whichever is higher, capped at 50 percent of total project cost. The utility does require pre-approval for projects over $1,000. There are no exclusions for EPC projects. Some businesses have expressed interest in larger efficiency projects since the programs were launched last year, and there have been discussions with the utility about on-bill financing, although Holy Cross does not currently offer financing solutions. EPC could be a viable alternative financing mechanism in some cases.

Intermountain Rural Electric Association

The Intermountain Rural Electric Association (IREA) is ranked fourth in commercial sales, but has a small industrial customer base (ranked 17th in the state). Unfortunately, IREA does not support energy efficiency, and offers no programs or incentives for DSM projects in any sector.

[10] For more information, visit http://www.fcgov.com/utilities/business/conserve/business-efficiency-program.

[11] For more information, visit http://www.holycross.com/rebates

Cooperative Utilities

There are several cooperative utilities in Colorado with significant load classified as industrial, including:

- White River Electric Association
- La Plata Electric Association
- Moon Lake Electric Association
- Empire Electric Association
- Poudre Valley Rural Electric Association
- United Power

The size of the utilities' industrial load is a reflection of the types of businesses operating in their territories – mining, oil and gas production, and agriculture, including irrigation and large feed lots. In general, most co-ops, particularly in rural areas, are most concerned with keeping rates as low as possible for their customers, but some do support energy efficiency programs.

Most of the electric cooperatives listed here are members of **Tri-State Generation and Transmission Association,**[12] a wholesale electric power supplier owned by the 44 electric cooperatives that it serves, of which 18 are located in Colorado. Tri-State manages the Energy Efficiency Credits (EEC) program, which is offered to customers through its participating member co-ops.[13] All Tri-State members are eligible to participate and may tailor the program to meet their specific goals. Most co-ops offer additional incentives to their customers, enhancing the Tri-State EEC program.

For commercial and industrial customers, prescriptive rebates are offered for:

- Lighting replacement
- LED lighting in new construction, outdoor lighting, and in specific retrofit applications
- Premium efficiency electric motors
- Variable speed drives
- Electric thermal storage

Tri-State has initiated several pilot programs, including:

- Submersible irrigation pumps (cap at $50,000)
- Commercial refrigeration audits (cap at $50,000)
- Industrial manufacturing/agricultural audits (cap at $120,000)
- Custom Energy Efficiency (cap at $100,000)
- Smart grid (cap at 50 percent of project cost, program cap at $250,000)

Tri-State also sponsors education programs for the commercial and industrial sectors. Seminars are offered on advanced efficient irrigation techniques and efficient motors and drives. There are no restrictions for EPC projects in Tri-State's programs, although it appears that the largest projects completed through this program were in the public sector.

[12] **Moon Lake Electric Association is not a part of Tri-State.** Moon Lake's territory is mostly in northeastern Utah, with a small section in northwestern Colorado. The coop offers only residential rebates for water heaters and ground source heat pumps.

[13] For more information, visit http://www.tristategt.org/eecPrograms/documents/2013-EEP-informational-brochure.pdf

CONCLUSION

The larger utilities in Colorado, both investor-owned and public, have the infrastructure and incentives to support EPC projects. There are few restrictions on these projects and there appears to be a willingness on the part of all of the utilities surveyed for this report to support and cooperate with contractors to bring projects to fruition. While the utilities are not specifically tracking how projects are financed, most program managers are aware of the performance contractors operating in their territories, and have anecdotal information on how EPC projects have fared in their programs.

SWEEP's next report will discuss project, market and structural barriers to private sector EPC projects, and offer recommendations for how to manage and/or overcome those barriers.

APPENDIX: ENERGY EFFICIENCY PROGRAMS OFFERED BY RURAL ELECTRIC UTILITIES IN COLORADO April, 2013

The following seven public utilities have the highest loads among Colorado utilities based on volume of kWh sales in three categories, for total, commercial and/or industrial customers. Five of these are part of the Tri-State Generation and Transmission Association (Empire EA, La Plata EA, Poudre Valley EA, United Power, and White River EA). Two are not part of Tri-State (Intermountain REA and Moon Lake EA).

Tri-State offers incentives for commercial/industrial and residential customers:

- Electric heat pump (central air source or ground source closed-loop)
- Air conditioners (split system)
- Commercial lighting replacement, LED new construction, LED refrigerated case doors, & street, parking lot and security lighting
- Energy Star LED light bulbs
- Electric water heaters and heat pump water heaters
- Energy Star appliances – refrigerators, freezers, clothes washers and dishwashers
- Electric motors, premium efficiency
- Variable speed drive retrofit
- Low income weatherization
- Electric thermal storage
- Thermal slab

Tri-State currently is offering several pilot programs:

- Irrigation pumps, submersible
- Smart grid
- Commercial refrigeration audits
- Industrial/agricultural audits
- Custom energy efficiency pilot

Incentive amounts are available at:
http://www.tristategt.org/eecPrograms/documents/2013-EEP-informational-brochure.pdf

According to Lowell Stave, Tri-State's senior manager of member services and rates, member utilities can offer any, all or none of Tri-State's incentives to their customers, combining their own incentives with Tri-State's at their discretion.

1. Empire Electric Association

Empire Electric Association's website compares what Tri-State offers to support energy efficiency, and how EEA supplements those incentives. The utility matches Tri-State's rebates for most measures in the residential and commercial sectors, effectively doubling the incentive to participants. There are two exceptions where Tri-State provides a rebate, but EEA does not match it: for load control measures, since EEA does not have a load control program, and for LED light bulbs.

Additional rebates are provided for residential and business customers for the following measures:

- Electric heat pumps
- Controlled resistance heating
- Terminal units
- Electric water heaters
- Appliances (refrigerator, dishwasher, clothes washer)

http://www.eea.coop/pdf/EEA-EEC_Handout_Res.pdf
http://www.eea.coop/pdf/EEA-EEC_Handout_Com.pdf
http://www.eea.coop/pdf/LED-Lamp-and-Fixture-Rebate.pdf

2. La Plata Electric Association

La Plata EA offers incentives (limited to Tri-State incentive levels) for energy efficient equipment in these categories:

- Water heaters
- Permanent electric heaters with controllers or heat pumps
- Electric motors
- LED light bulb rebate $10
- Commercial energy efficient lighting
    - For retrofits of overhead fluorescent/area lighting, refrigerated case lighting and street/parking lighting, rebate to replace T-12 fluorescent lighting with energy efficient T-5 or T-8 lamps and change magnetic ballasts to more efficient electronic ballasts
        - $250 rebate per kilowatt of reduction, up to $20,000 rebate
    - **Lighting Retrofit Credits**
        - $250/kW of lighting load reduced, up to the $20,000 total
        - Rebate cap at 50 percent of the lamp material costs
    - **Refrigerated Case Lighting Retrofit Credits**
        - $60 per door, up to $3,000 rebate
    - **Parking Lot/Street Lighting Retrofit Credits**
        - Lesser of Y4 of the cost of the head or $200 per head, per project cap of $20,000
    - Basic commercial energy assessment

Commercial Lighting Pre-Approval Spreadsheet (.xls)
Commercial and Industrial Lighting Buyers' Guide
http://www.lpea.com/efficiency/lighting.html
http://www.lpea.com/rebates_credits/efficiency_credits.html#LED
http://www.lpea.com/rebates_credits/commercial_lighting.html

3. Poudre Valley Rural Electric Association

Poudre Valley has what appears to be the most extensive energy efficiency program among the rural associations. That said, all 2013 insulation rebates have been claimed already, so program budgets may not be fully meeting customer demand.

- Commercial:
    - Lighting, LED & induction street lights rebates are the lower of:
      $250 / kW saved, limited to 50% of invoiced fixture and lamp material cost, per project cap of $20,000
    - Electric motors
      NEMA and Special Purpose Premium Efficiency motor incentives are $ 10 / hp - for Motor 10 to 500 hp ($8 / hp Tri-State, $2 / hp PVREA) with additional support for wiring assistance
    - Variable speed drives, incentives range from $1,600-$6,800, depending on motor size

http://www.pvrea.com/programs/index.html

4. United Power

United Power offers rebates for business and residential customers:

- Commercial/Industrial Rebates
  - Electric Motors
  - Commercial Lighting Replacement (Tri-State rebates only)
  - LED Refrigerated Case Lighting Retrofit (Tri-State rebates only)
  - LED Street Lighting & Area Lighting (Tri-State rebates only)

Electric Irrigation Motors	**Rebate from Tri-State G&T**	**Rebate from United Power**
New permanently installed irrigation motors: 10-500 HP *Payments for motors larger than 200hp may be negotiated.*	$8/HP	$1/HP

Commercial Lighting Replacement	**Rebate from Tri-State G&T**
• Program available for retrofit of existing lighting systems only. • To qualify for incentive, review and approval of project by Tri-State is required prior to installation. • Only one project per member account per year. **Efficiency Standards** • Recessed fixtures must have high efficiency ballast. • Target illuminance levels must exceed guidelines from the IES Lighting Handbook, 8th Edition Fig. 11-1.	• $250/kW saved, calculated • max 50% of invoiced equipment cost • Per project cap of $20,000 annually. *Project is defined as a single location.*

LED Refrigerated Case Lighting	**Rebate from Tri-State G&T**
• Retrofit means replacement of lighting in existing cases or lighting in new cases installed in an existing store or location. • Applies only to permanent installations. • Applies to medium and low temperature reach-in refrigerated cases and multi-deck open cases. • One project per member account location per year.	• $60 per door for reach-in cases • $10 per lineal foot for top lighting of multi-deck open cases Capped at 50 doors or $3,000 per project. *Project is defined as a single location.*

LED Street Lighting & Area Lighting	**Rebate from Tri-State G&T**
• Applies only to permanent installations. • To qualify for incentive, review and approval of project by Tri-State is required prior to installation. • Only one project per member account per year. • Does not apply to lamps of less than the equivalent light output of a 150 watt high pressure sodium lamp. **Efficiency Standards** • Minimum luminaire efficacy of 50 lm/W. (This is a fixture efficacy.) • Minimum 0.90 Power Factor.	Receive the lower of 1/4 of the cost of the head, or $200 per head for 400 watt equivalent light output. Per project cap $20,000 annually. *Project is defined as a single location.*

Energy Efficient Appliance Rebates (rebate information on United Power's website, links below)

- ENERGY STAR® LED Bulb Rebate
- ENERGY STAR® Appliances: Refrigerator, Freezer, Washer, Dishwasher
- Refrigerator/Freezer Recycling Credit
- Electric Heat or Electric Thermal Storage
- Electric Water Heater
- Heat Pumps: Air Source and Geothermal

http://www.unitedpower.com/mainNav/yourEnergyOptions/energyTips.aspx
http://www.unitedpower.com/mainNav/yourEnergyOptions/rebate.aspx

5. White River Electric Association

- Commercial lighting rebates are offered to commercial, industrial and agricultural cooperative business members. Only business members with more than 10 bulbs or fixtures at their facilities will qualify. The rebate amount will be determined prior to installation and calculated based on an audit of existing and replacement lighting. The total rebate amount is limited to $30,000 per business member per year and the rebate cannot exceed 40 percent of the total equipment cost.

- ENERGY STAR REBATE PROGRAM

Qualifying Appliances:	***Residential***	***Commercial***
Electric Water Heater	$50	N/A
High Efficiency Room A/C Unit	$50	N/A
Ground Source Heat Pump 19.1 EER (New Installation)	$750/ton*	$750/ton*
Ground Source Heat Pump (Replacement of Existing Unit)	$150/ton*	$150/ton*
Dual Fuel 16.5 SEER Heat Pump or Higher	$150/ton	$150/ton
Air Source Heat Pump 15 SEER or Higher	$150/ton	$150/ton

* WRVEC will not rebate Direct Expansion Systems

http://www.whiteriver.org/rebate_program.aspx

6. Intermountain Rural Electric Association

IREA provides no-cost energy audits to residential and business customers, which can be characterized as a 'walk-through' audit. An energy efficiency specialist collects data on a home's heating and cooling systems, energy use patterns, the types of electrical appliances and equipment, and opportunities for energy efficiency improvements. During colder months, the auditor uses thermal imaging equipment to identify cold spots within the home. Customers are provided with a set of recommendations, but no additional incentives are provided.

http://www.intermountain-rea.com/customer-tools#Energy Audit
http://www.intermountain-rea.com/

7. Moon Lake Electric Association

Moon Lake EA offers rebates for electric water heaters of $75 - $225, depending on tank size and length of warranty.

http://www.mleainc.com/rebates.html
http://www.mleainc.com/index.html

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

Report 2: Summary of ESCO interviews

June 2013

BACKGROUND

Energy performance contracting (EPC) has been highly successful in Colorado's public sector, but has struggled to find a foothold in the private sector nationally. The Colorado Energy Office (CEO) received a grant from the U.S. Department of Energy to encourage private sector businesses to use EPC and launched a program in 2012. The CEO is providing up to 75 percent of the cost of an investment-grade technical energy audit (TEA) up to a cap of $25,000. Currently, CEO's program has 12 projects active in the performance contracting process.

CEO contracted the Southwest Energy Efficiency Project (SWEEP) to research market barriers that prevent widespread adoption of EPC within the private sector. Previous reports for this contract reviewed statewide utility offerings that support private sector EPC projects. This second report compiles interviews with representatives of three energy service companies (ESCOs) with experience managing private sector EPC projects. The objective of this summary is to capture the voice of the three ESCO sources, while still maintaining their confidentiality, to provide intelligence on factors inhibiting success in the private market, and to offer preliminary potential solutions.

CONCLUSIONS

The project plan is to reserve the remaining budget in SWEEP's contract until most or all of the companies currently going through the EPC process have completed projects or otherwise ended their participation, and then interview decision makers at those companies. A clearer picture of the program will emerge at that point, and the hypotheses offered by the ESCOs in this report will be supported or refuted by further program experience. Some preliminary conclusions can be drawn of the ESCO perspective on private sector energy performance contracting:

1. It is important to make a strong business case for EPC in the private sector, and to show how the EPC process, financing options, enhanced analytics and performance guarantees add value that cannot be achieved through other mechanisms. Outreach is important, and case studies about successful projects in key market segments can be a valuable tool in making a compelling argument for private sector EPC.
2. Attractive financing alternatives, developed through public-private partnerships, revolving loan funds, or some other innovative mechanism, may hold a key to opening the private sector EPC market.
3. Leveraging CEO's program with utilities' DSM programs will encourage orderly market growth. CEO's $25,000 support for the TEA is a positive market driver for private sector

EPC projects. It is recommended that CEO continue to reach out and work with utilities in the state to develop a process for EPC that harmonizes incentives, and that is not too redundant and/or onerous relative to calculating project cost effectiveness and implementing M&V protocols.

4. Two of the three interviewees expressed concern about conversion rates from TEA to project completion. It will not be clear until fall 2013 or later whether this concern is warranted. If the conversion rate for private sector projects is substantially lower than for public sector projects, it will be important to understand why.
   - If companies do not go forward with a capital project, it may mean that the program was not effective at motivating companies to proceed with EPC, or that companies receiving a TEA were not well qualified for some reason.
   - If companies drop out of the EPC program, but implement projects with their own financing and contractors, it supports revising the incentive structure to motivate companies to stick with the EPC process, possibly by paying out a somewhat larger incentive over time as savings are realized after implementation.
5. Fully vetting interested companies is an important step in the performance contracting process. A rigorous and systematic pre-qualification process involving companies' highest decision-makers may lead to a higher conversion rate, fewer 'dry holes', and a more cost effective investment on CEO's part. However, it may be that the most appropriate party to conduct the due diligence involved in qualifying a potential EPC customer is the ESCO firm itself. The program process could easily be modified to smooth the transition from the initial presentation, which is given by the third-party program manager, to the ESCO for further pre-qualification.

ESCO INTERVIEWS

Interview #1 Summary

<u>Differences in Approach to Market</u>

Private sector projects tend to be smaller than those in the public sector, since private companies often have done some projects and do not have the same pent up demand. With smaller projects, there are lower savings and shorter payback periods. Private companies may be less interested than public organizations in paying for performance guarantees. This interviewee predicted that the conversion rate would be lower for private sector companies compared to publics, since they have better access to funding and don't need EPC to get projects done, where the public sector doesn't have the same options.

The challenge in managing private sector clients is converting technical energy audits into projects. There is a threat that private sector companies will self-implement on projects recommended in the TEA. Private companies work with their own contractors, and are used to getting multiple bids. They may question the additional fees for ESCO guaranteed savings,

which can be an extra $20,000/year. Private companies usually opt to save costs, use people they know and like, and don't necessarily see ESCOs as adding value.

ESCO oversight and analytics used to achieve savings can be an important driver in using EPC. Without it, companies may engage in cherry picking on efficiency projects, but often will be disappointed, since measures installed in smaller projects may produce savings that may not be easy to see without appropriate analysis. For example, if a company builds a new wing or if facility utilization changes, analytics are vital in measuring savings impacts from EPC projects that could otherwise be hard to detect.

Most private companies like the certainty of what they're going to get with EPC. CEO has developed a cost-effective mechanism with their investment, one that produces no free riders, since the companies that get a TEA and follow through with projects are doing so with very little direct investment by CEO.

Recommendations:

- Continue offering the $25,000 incentive for TEAs. While it doesn't buy much in the greater scheme of an energy performance contract, it garners private companies' attention, and the state can get outsized value from a small investment. Allow carry-over of any unspent TEA incentives to the implementation phase (within some parameters).

Interview #2 Summary

Utility Support for EPC

This interviewee said that Colorado utilities (IOUs and publics) are not supportive of the EPC project approach. The IOUs have rebates for individual measures, and some support bundled projects, but none support EPC specifically. Xcel had the Standard Offer program, but is cancelling it. The utility still has a self-direct program, but that is restricted to customers with 2 MW or more of electric load, which restricts most commercial users. The situation with rural co-ops is bleak – there are a few lighting rebates, but most co-ops are not supportive of efficiency in general.

There were hindrances in Xcel's Standard Offer program that made it onerous for both Xcel and participating ESCOs. Xcel did not accept the ESCO's audit, and had its team reengineer and recalculate the rebate potential, which delayed approvals in some cases by up to a year, which does not work for the ESCOs. At the end of the analysis, Xcel usually came very close to the ESCO estimates, but paid a high price in wasted time. The Standard Offer program could have been a better program if there had been a better level of trust from the utility in the documentation that the ESCO provided to its clients and to CEO. Utilities should be able to review ESCO reports but trust the results in most cases, which have been backed up by the savings guarantee.

Second, Xcel wouldn't accept the ESCO's M&V plan, and insisted on its own M&V at the meter (CEO does accept the ESCO's M&V plan in its private sector project and public sector

program). If the ESCO guarantees savings for a boiler, for example, the ESCO will measure that directly, and if savings fall below thresholds, the EPC structure protects the client's investment. Xcel was measuring energy use in the whole building, which muddled the savings analysis, since many other factors can impact energy use at the meter level. From Xcel's perspective, some projects didn't pass cost effectiveness screening, but so much time was spent in engineering that it actually reduced the project's cost effectiveness.

It also would have been beneficial if Xcel had provided pay for performance over time, instead of one big rebate at the beginning of projects, which would benefit the ESCO's cash flow statements.

Differences in Approach to Market

The major difference between public sector and private sector projects is that decision-making is more complicated in the private sector, since more people have to be convinced that a project is a good idea. Factors contributing to this complexity are expected lifetimes of buildings and facilities, financing options, conversion risk, and split incentives in tenant-occupied commercial real estate.

Public organizations need to invest in their buildings and facilities, which often are expected to last 50-100 years, and which the organization expects to occupy the whole time. The longer time horizon makes those organizations more willing to invest in longer-term payback projects.

Public sector entities don't have money for capital investments, and are providing services in a not-for-profit context. They can get financing at much lower rates than those in the private sector, at around 3%, compared to 7% for private capital. This difference makes EPC much less attractive to a private entity, which is in business to drive profits. Private companies don't want to pay interest for financing. They may use their own capital, but then the efficiency project has to compete with all other proposed CapEx projects, and often can't meet the same ROI as other types of investments.

From an ESCO's point of view, there is a lot more risk with private sector projects. Most public sector clients are willing to engage in substantial projects and have long histories with ESCOs they have worked with in the past. The private sector doesn't have the same base, and could go through an audit and then turn down the project, leading to lower conversion rates from development to implementation for private sector projects.

In the private sector, much commercial office space is not owner-occupied. EPC works better if the owner occupies the property. Exceptions include institutional entities such as private schools, hospitals or recreation centers, which are likely to stay in the same facility for a long time. But commercial office buildings with a building owner, a property manager and multiple tenants are subject to split incentives, making these projects substantially less attractive for EPC.

Private sector buildings may also be more difficult to audit. A private owner could have a small building with many tenants. Institutional building audits tend to be more complicated. For

example, one city in Colorado owns multiple buildings with hundreds of thousands of square feet of space, but has many tenants and hundreds of utility bills.

Recommendations

- CEO should continue to offer incentives, specifically the $25,000 audit grant, which pays for roughly half of the audit cost, as a way to get private sector companies off the dime.
- CEO should do more education and outreach to the private sector. It would be particularly helpful to develop case studies of successful private sector EPC projects. Private sector companies would probably respond positively to representative case studies of companies similar to theirs that make the business case for doing EPC.
- CEO should work to bring in other, better options for low interest financing.
    - A revolving loan program would be helpful in providing options to private sector companies and in creating a mechanism that would allow CEO to continue the program over time.
    - Qualified energy conservation bonds (QECBs) could be a good opportunity for private sector financing at low rates, if a private entity could issue bonds and get projects completed[14]. QECBs are targeted at public facilities, and have not been used much for private projects since there are extra hoops and the path is not straightforward. The ARRA allocation for Colorado QECBs ($50 million) has been used, but other states have not used their allocations, so some money is still available. Colorado could negotiate with other states to reallocate some of those funds, since its private sector EPC program has established a mechanism to use such funding.
- CEO should work collaboratively with utilities in the state, both IOUs and public utilities, to develop more attractive rebate programs that support EPC projects in the private sector, with better rebates for implementation and rebates paid out over time.

Interview #3 Summary

Differences in Approach to Market:

The most important difference between public and private sector EPC projects is that the private sector is managed very differently from the public sector. Public entities have buildings and facilities that are expected to last into perpetuity, and managers find 12-15 year payback periods acceptable. In the private sector, payback is the #1 consideration. Private entities are trying to manage their assets diligently, and they need a three-year payback, or 30% rate of return, on any capital investment they make. They are not forced to look out as far into the future as public entities. Utility rates affect the payback, and Colorado rates are low compared to the east coast,

[14] Note: the QECB is aimed at projects in public facilities that save at least 20%. Is it possible to use this mechanism for private projects through the green communities program provision? http://www.irs.gov/irb/2012-28_IRB/ar11.html

which has rates three to four times higher than Colorado's, and that difference means many fewer opportunities in Colorado to get an ROI that falls within a private company's parameters.

The length of time to complete an audit and project proposal is different. Private companies move faster and are more nimble. They are used to self-implementing projects, so if a good idea comes along and makes sense to do, they jump on the opportunity faster.

The types of projects undertaken in EPC are different. Public entities are more likely to aggregate measures that have highly cost-effective savings with infrastructure upgrades that have low or no savings, and EPC becomes a strategy to get infrastructure upgrades in a project bundle. Private sector companies focus on the shortest payback projects, and often self-execute those projects.

There is a very different qualifying process. To qualify a private customer, the ESCO tries to discern if they have the ability to self-implement, and if so, they are not a good candidate from an ESCO's perspective. A savings guarantee is not as compelling to a private company as it is to a public organization. Private companies have the ability to hire a consultant to do the measurements they need to move forward, but publics don't have the capabilities or bandwidth for that approach. The mechanism for financing is also different. Taxable entities can't do tax exempt municipal leases, but public entities have that option.

People think EPC is about guaranteed savings, or a company's carbon footprint, but that is not typically what drives private companies to pursue EPC. The primary drivers are whether somebody else's capital is more attractive than theirs and the desire to upgrade their company's infrastructure. Other motivators may include: a structure where managers are incented to reduce utility expenditures, a business engaged in environmentally unfriendly activities that wants to market its products as environmentally friendly, or a company with limited access to capital for infrastructure improvements.

Assessment of Current Program Structure

CEO's program offers up to $25,000 to help companies undertake a technical energy audit. But, the private sector never had a barrier to TEAs, so in the view of this interviewee, the grant is not a solution to the market barrier problem, and actually may exacerbate it. CEO's support for the TEA rewards private sector companies for doing what they may already have been doing on their own, but does not provide support for EPC project completion.

The qualification process currently used in CEO's program provides education about the value of EPC, but does not adequately identify companies likely to follow through with construction. Companies may have an interest in EPC and send a representative to the introductory outreach meeting (which is arranged by the third-party program manager). While the company's representative will get a basic understanding of EPC through this process, that person may not be the decision-maker. It is important to secure the participation of the company's executive decision-makers (COO, CFO or CEO) early in the process, and to fully qualify and vet that company before the TEA, particularly in the areas of credit worthiness and requirements for internal rate of return. Qualifying a lead before an audit leads to a higher conversion rate from audit to project completion.

The business development people within ESCOs are responsible for ascertaining a company's level of qualification and should be involved in that part of the process. They will know what questions to ask and the risks of not asking the right questions. There are a number of avenues to investigate before asking direct questions, such as annual reports, balance sheets, D&B inquiries, shareholder reports, and stock trade information. Armed with that kind of information, an ESCO can have an intelligent, relatively short conversation with a top executive and get a bottom line answer about whether to proceed.

This interviewee expects that the conversion rate from TEA to project completion in this program will be relatively low. If the conversion rate is low, however, it doesn't necessarily mean that the private sector is not open to EPC, but rather that the qualification process needs to be revamped in order to stimulate successful project completions.

Recommendations:

- The incentives for private companies should be higher, the number of grants fewer, and the grants awarded only upon execution of a performance contract.
- It is critical that a top executive in the company (CEO, COO, or CFO) be engaged early in the process.
- ESCOs should be doing the pre-qualification process, particularly in determining credit worthiness and requirements for internal rate of return.
- For each project, the CEO program manager could pick one ESCO to complete the pre-qualification process, and then provide those results to three other ESCOs to bid on, to support a competitive environment. Doing pre-qualification be rotated among the program ESCOs.

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

Report 3: Summary of participating company interviews

April, 2014

BACKGROUND

Energy performance contracting (EPC) has been highly successful in Colorado's public sector, but has struggled to find a foothold in the private sector nationally. The Colorado Energy Office (CEO) received a grant from the U.S. Department of Energy to encourage private sector businesses to use EPC and launched a program in 2012. The CEO is providing up to 75 percent of the cost of an investment-grade technical energy audit (TEA) up to a cap of $25,000. Currently, CEO's program has 16 projects that have been or are going through the performance contracting process.

CEO contracted with the Southwest Energy Efficiency Project (SWEEP) to research market barriers to adoption of EPC within the private sector. Previous reports for this contract reviewed 1) statewide utility offerings that support private sector EPC projects, and 2) the perspective of energy service companies (ESCOs) that have managed private sector EPC projects. The objective of this third report is to summarize the experience and views of companies that have participated in the program. To date, only three companies have completed the program's technical energy assessments (TEAs) – interviews with those three companies are summarized here. This report will not disclose the identities of participants. Confidentiality was promised in order to elicit full and honest feedback about the program.

CONCLUSIONS AND RECOMMENDATIONS

The CEO private sector EPC project has formally engaged with 16 companies in the private sector over the last two years with a value proposition of 1) subsidies for investment grade audits, 2) facilitation by ESCOs to acquire financing if the companies wanted it, and 3) guaranteed savings provided by an ESCO. Based on the very small sample of three program participants, we can draw only preliminary conclusions and make preliminary recommendations. Of course, these may be modified substantially by the experience of the majority of companies that will complete the program over the next several months.

SWEEP interviewed three companies that had completed the TEA – of those, two moved forward with performance contracts and one did not.

Of the three main components of the program offering, these companies valued highly the technical energy assessment; the appeal of guaranteed savings was mixed; and the companies all said they were self-financing recommended construction projects:

- The companies interviewed place high value on the technical energy assessment, and thought it gave them a reliable, objective road map for investing in large capital-intensive

projects. This was true even for the one company that decided not to move forward with construction through the program. All respondents also appreciated the CEO support of up to $25,000 for the TEA (and all maxed out on the incentive).[15]

- Guaranteed savings was an attractive feature of energy performance contracting for only one of the three respondents. That person appreciated the sense of security offered by guaranteed savings. One respondent who did contract with an ESCO for the construction voiced concern about the M&V process, cost and timeframe, and reported his company was unsure they wanted to do it. The respondent who didn't move forward with his ESCO into construction expressed intentions to hire his own vendors to complete some recommended projects, and was not particularly concerned about the verification of savings.
- The two companies that moved forward with performance contracts are self-financing those projects, and the third company also is self-financing follow-on construction with his own contractors. For this small group, the program's financing feature was not valued or used.
- While more detailed technical information about projects will be available in other program reports, the companies surveyed here represent a range of project sizes. One company completed a $2.6 million project, including replacing or adding chillers, air handling units, thermal equalizers, building automation, lighting upgrades, and pumps. Another did a smaller project of about $130,000 that included lighting, compressed air, and some mechanical and process improvements. The third company did not move forward with a performance contract, but reported intentions to upgrade HVAC, lighting and vending machines during renovation projects over time.

While I hesitate to draw any strong conclusions from this 'n of 3', I recommend that CEO continue the private sector EPC program and consider the following recommendation for the scale up of the program:

First, the TEA is an important offering that the program participants value highly. It helps companies understand what can be done, what the results are likely to be, and how much it will cost. This information – a concrete, specific and actionable efficiency road map – is one of the best parts of the program and should be continued. However, there currently are projects going through the program that complete the TEA phase but do not move forward with performance contracting. In the existing program design, these would be considered 'dry holes.' But they needn't be, if the overarching goal of the program is to move the C&I market towards more comprehensive efficiency projects that produce deeper savings, and to open up opportunities for attractive financing alternatives. The savings from projects that don't use ESCOs can be counted. I recommend these 'other' projects be reported in a separate line item that can be summed with the results from projects using performance contracts for an overall program total. The program also possibly may benefit from co-funding TEAs with Colorado utilities that offer support for investment grade audits, and working with utilities to develop the mechanics of such an arrangement.

[15] The two projects using performance contracting also received utility incentives for installing eligible measures.

Second, I recommend that TEA prices be based on TEA costs. ESCOs report that TEAs are loss leaders, an entrée to get the performance contract, which is where the real profit is. ESCOs may be reluctant to accept another company's TEA, since that may work against their business model. But this is an area where CEO can influence change, possibly by issuing an RFP for companies to do TEAs as a separate service, structured so the companies selected get a fair profit, and possibly could build a business model around independent TEAs. Having a disinterested, objective third party as the TEA provider will offer many companies exactly the service they are looking for. While some companies may not move forward with a performance contract, many or most will move forward and implement at least some of the TEA recommendations, so the TEA will have done its job. For companies that choose to move forward with a performance contract, there would need to be an understanding that ESCOs accept the third-party TEA.

Third, from this sample, it's impossible to tell if financing facilitated by ESCOs, or any kind of private sector financing, really will be useful, but it might be for some companies. It would be good for the program to enable, facilitate, or leverage other types of financing, such as CPACE, and be able to integrate other financing options into projects where companies want to finance.

Fourth, opening up the efficiency market for large C&I customers also could be an opportunity for CEO to participate in community-based initiatives, such as the City Energy Project now getting underway in Denver, or another 'big data' initiative that encourages large users to analyze the energy use of their buildings and facilities, perhaps through a tool such as US EPA's ENERGY STAR Portfolio Manager®. U.S. DOE also is supporting a data accelerator project, which engages local governments to reach out to their commercial and industrial constituents and encourage benchmarking. Supporting development of this market approach could enable better targeting of high energy use intensity buildings and facilities, which could lead to better results for the private sector performance contracting program.

Fifth, M&V is important, and all projects should have some level of it. ESCO's EPC projects will have more, since the ESCOs are guaranteeing savings and need to manage their risk. Projects that move forward without performance contracts should be required to have M&V, and CEO could develop protocols for it. One strategy that has been successful in making sure that savings are achieved is commissioning, which could be required for projects that are completed outside a performance contract. CEO is investing its $25,000 per project, plus other program administration costs, and it has a reasonable right to expect verified outcomes. Benchmarking plus commissioning could be a relatively cost-effective solution to accomplishing a reasonable level of M&V, and ensuring that customers realize the savings projected by the TEAs.

Sixth, the two respondents who moved forward with performance contracts reported they interviewed multiple ESCOs before making a decision about which to use. One was not satisfied with the information available through the program to support this decision. I recommend that CEO develop materials, or a webpage, that allows customers to research ESCOs, with information about their size, their specialties, examples of projects completed, and other variables that could help participating companies make an informed choice about ESCO selection.

Finally, the program process takes a really long time, and that creates its own barriers to completion. From the interviews done so far, the decision-making can wind through several layers of authority, and each layer needs to come to the table, get educated, get motivated, and agree to participate. This may be the biggest challenge for the program. I recommend that CEO work with its implementation contractor to develop a system to encourage timely back and forth between the customers and the contractors serving them. This could be aided by flowcharting the program process with timelines and deadlines, and developing reporting mechanisms to increase transparency on this issue. Delays at the participants' companies can be influenced somewhat. Delays at the ESCO or contractor companies can be managed more directly. Given the nature of the ESCO business model, projects will take a long time to come to fruition, so large improvements may not be possible, but incremental improvements are feasible, and shaving off a few days at each stage can add up to noticeable time savings over the entire length of projects.

Interview Summary (n=3)

1. *Had you heard of EPC before starting your project?*
   – In one case, the interviewee was aware of performance contracting in the public sector before any program contact, but was not aware of the private sector program. In two cases, the interviewees were not aware of the program before starting their projects.

2. *How did you first learn about the CEO EPC program?*
   – In one case, an ESCO representative contacted the company directly to pitch the program.
   – In one case, the interviewee heard about the program from a colleague who had experience with public sector performance contracting
   – And in one case, the interviewee heard about the program through a trade ally organization (Colorado Association of Manufacturing Technology), and made an email inquiry that was followed up by the program.

3. *What part of the CEO program made you move forward with the program?*
   – The biggest factor for two respondents in making a decision to participate was the backing of the Colorado Energy Office, which helped legitimize the offer being made by the ESCOs.
   – For the third respondent, the biggest factor was the rebate (which provided one-third of that company's TEA cost). The rebate was the second most important factor for the other two respondents – one mentioned that the cost of the TEA was the biggest barrier to entry for that company, and the other said that the grant 'softened the blow' on project costs. The quality of the TEA also was important, as a resource that was more in-depth than anything one company had contemplated before, and that provided options with real dollar amounts that supported a concrete plan of action.
   – Finally, one respondent also cited the Xcel DSM incentives, and that person also appreciated that the ESCO took care of the paperwork to apply for the utility rebates.

4. *I am going to list out the steps that the program follows and would like your input regarding any changes you would have made to each stage*:

a. *Introduction (EPC 10one Stage)*
– Two respondents commented that this step was straightforward, and that Nexant did a good job explaining the program in the initial phase.

b. ESCO Selection (if applicable)
– One respondent replied that his company interviewed four companies before selecting an ESCO.
– Another interviewed three companies, but suggested that CEO change that part of the process to create a way for companies to sit down with CEO or its representative early in the process, and have face-to-face introductions to companies, and learn about their specialties, their track records, and what they're good at. This respondent said that the responsibility to select a contractor was all on their shoulders, and there were 19 ESCOs to choose from.

c. Technical Energy Audit contract and report
– One respondent had a complaint that it seemed to take a long time to get the report, and that there were a number of delays where the ESCO missed two to three deadlines, so the information was not as timely as it could have been, but that when they did the report, it had a level of detailed information that was very good.
– Another commented that the ESCO did a great job, and that the report was thorough.

d. Energy Performance Contract (if applicable)
– Only one respondent commented on this phase, saying that it was a long and arduous process, and that the ESCO had to recreate the contract because their only previous experience was with public sector projects and contracts.

e. *Construction (if applicable)*
– According to one respondent, the construction phase went very well, and the ESCO did a great job with a complex project. The CEO monitoring and auditing provides a sense of security, with guaranteed energy savings giving reassurance that the company is actually going to get those savings.
– Another respondent reported that construction was past the half-way point, and was going well, and that having an internal project manager to drive that phase was important. This person recommended that the CEO program find a way to ensure that there is a project manager for all projects in the program. He said that, unlike his company, smaller companies that may not have the resources for an internal project manager.
– The third respondent reported that his company decided not to move forward with the project, since very few items on the TEA report met the company's parameters for payback. This company likes to see paybacks of five years or less, and will consider paybacks up to seven years, but that the recommended measures had even longer payback periods, or were not expected to produce enough savings to justify their installation. This respondent reported that the company had been doing energy efficiency improvements, some of them large, over time, which limited what could be accomplished by the ESCO.

5. *How many levels of approval at your company were needed to green light the project? (Specify if possible) How were those people identified? When were the decision-makers brought into the project?*
– The internal approval process was based on the structure of the participating company. For a community-based group, approval was needed from the respondent, his manager, a

group of delegates and the organization's board.
– For another company, the approval process had to go through the respondent, general manager, and then the leadership team, which included the CEO and COO.
– The company that decided not to move forward had the simplest decision structure – the project manager, his manager and his manager's manager were required to approve participation. The decision makers were all in Colorado, and that phase went quickly for that company.

6. *Regarding information and educational materials:*
    a. *How were the individuals at your company who needed to approve the project informed about its details?*
    – All respondents said that they appreciated the initial (EPC 101) presentation by Nexant and used that presentation for communicating with others at their organizations about the project. One mentioned that the ESCO also prepared PowerPoint presentations during the process. All reported multiple meetings focused on making decisions about how to move forward. The TEA report was critical in the decision-making process.
    b. *How would you rate the quality of information provided by the energy service company that you worked with? Did you receive enough information and education on the process, financing options, costs and benefits, and any other relevant aspects of the project? (Specify)*
    – All respondents reported that they received enough information to make a decision, and one went on to say that the information provided by the ESCO was absolutely outstanding, head and shoulders above most vendors.
    c. *What kinds of information would have been helpful that were not available? How would that information have helped?*
    – One respondent said that the information provided was very thorough and had no additional suggestions.
    – One respondent recommended that the program provide case studies of previously completed projects with in-depth information on time frames, processes, barriers, and challenges, mentioning specifically the contract process, where the company could have dedicated resources up front rather than the back and forth that actually happened.

7. *How would you rate the overall communications between your company and the energy service company that provided the technical energy audit? How could communications have been improved?*
    – All three companies thought that communications throughout the process were very good, great, and outstanding, respectively.

8. *Do you think your company had good options for financing the project? How was the project financed ultimately? What, if any, issues arose around the project financing, and how were those issues managed? What were the pros and cons of various financing options (i.e. keeping it off the balance sheet)?*
    – The two companies that did performance contracts self-financed construction. They did

look at other options, but had the capital to complete the recommended projects.

9. *Besides financing, were there other kinds of risks or challenges that your company looked at in considering whether to proceed with this project? How were those risks managed?*
   – The respondent who did not move forward said the biggest risks were related to payback and cost issues, and the time and hassle that would have been required to manage a bigger project.
   – One respondent reported that he didn't see much risk, since he thought the whole package was fairly conservative, but that the company was unwilling to pay for financing, which would have added to the risk.
   – One respondent talked about checking the ESCO's references and found that previous projects were saving more than what was guaranteed. Since the savings were guaranteed, he thought there was not much risk in moving forward.

10. *Based on your company's experience, what do you think are the key barriers to private sector performance contracting projects? Do you have any recommendations for the CEO or utilities on how to overcome these barriers?*
    – One respondent reported that the biggest barrier is cost and whether a company feels that bottom line benefit and sees the payback. Rebates mitigate that barrier.
    – One respondent said the long payback periods are a barrier.
    – One respondent agreed that the upfront grant covering part of the TEA costs was an important strategy to getting the result of finding out what the company needed to do. Projects like this compete with the company's other investment needs or its revenue generation activities.

11. *Would your company consider engaging in another Performance Contracting project?*
    – Two respondents said they would consider performance contracting again for major retrofit projects.
    – The respondent from the company that did not move forward said he would use his own contractors for future projects.

12. *Other comments?*
    – The respondent from the company that did not move forward expected to find more savings opportunities than were surfaced by the TEA, and said that the ESCO could have done a better job at setting realistic expectations early in the process.
    – The other two respondents had no additional comments, but expressed their appreciation and enthusiasm for the projects their companies had undertaken.

Summary of non-participating ESCO interviews

Late in the private sector EPC pilot program, Nexant interviewed three representatives of two ESCOs for their perspectives on the private sector market and EPC. Following is a summary of their responses.

1. **How long have you been involved with the ESCO industry?** *7 years, 7 years, 22 years*

2. **How long have you developed projects in the field?** *0 years, 3.5 years, 22 years*

3. **How long have you executed projects in the field?** *7 years, 3.5 years, 0 years*

4. **What is your perception of the project potential in the private sector?**

   Per the respondents, a lot of the private sector will do projects through their own funding; they have no need for financing or the guarantee. Private sector clients get to the TEA phase and they roughly agree with the savings estimates they get and then they implement the projects. There is little opportunity in the private sector due to the drive for lower payback and faster ROI. Also, the private sector has a lack of comfort with long term payback.

5. **What is your background in working with/developing business with private sector clients?**

   Respondent #1 – Have not done much with private sector clients, some work with Hospitals (Cx, RCx, not EPC).

   Respondent #2 – 15 – 20 years of experience in product specific sales and project management to private sector clients, but that was in the role of acting as a service provider, not EPC project work.

   Respondent #3 - The respondent has worked with private sector clients on a limited basis and done some manufacturing projects.

6. **What are the primary market barriers to private sector project development/execution?**

   Private sector clients expect shorter timeline on paybacks and readily have access to capital which decreases interest in 3rd party financing.

If it is a multiple location type of company (branches in different states and cities), they are all competing for capital budget dollars and demonstrating the larger need for their location to get the funding. This makes it hard to ensure moving forward with a project.

Owners whom manage the facilities somewhat create a dis-incentive for 3rd party coming in to "fix" the building. The property manager type of clients want to see the lowest first cost of improvements and have not historically proven to be good clients.

7. **What role do you feel the Colorado Energy Office could play in supporting ESCO interest in private EPC projects?**

   Create a program (revolving loan) where low interest money is available to private sector EPC clients (less than 1% to make it more affordable than traditional financing).

   The CEO can publicly promote Private EPC through various professional organizations which represent the private sector. Being present at conferences and maintaining a continual presence with utilities and these organizations alike will promote interest.

8. **What role do you feel the Colorado Energy Office could play in fostering more interest from private sector clients?**

   The CEO should involve itself in outreach to professional organizations like BOMA, etc.

   The CEO can attend conferences and professional organization meetings to make contact with businesses and disseminate information. When talking to people the CEO should focus on promoting the benefits of EPC within their particular business model. Also promoting all kinds of different techniques available to the private clients (i.e. cx, rcx, audits, etc)

9. **Does conversion percentage (taking projects from TEA phase to an executed EPC) play a large role in your decision to engage/not engage with private sector clients?**

   Yes, there would need to be a demonstrated track record of projects moving forward to entice the respondents to actively work in this sector.

   The respondents are in the business of implementing projects, not conducting energy audits.

10. **If so, what is your perception of conversion percentage in this market segment?**

    The perception of the respondents is that conversion percentage is low. A lot of clients take projects through the TEA process and self-implement. The respondents are not in the business of providing energy audits and can only pursue business where the risk of customers walking away after the TEA is low.

11. **Do you have any last comments regarding the private EPC market as a whole?**

    No. The respondents are intrigued to see what a future program will look like.

THE COLORADO ENERGY OFFICE

1580 Logan Street, Suite 100, Denver CO 80203

P 303.866.2100 **F** 303.866.2930

www.colorado.gov/energy