➢ New Construction

A. Description

The New Construction product influences building owners, architects, and engineers to include energy efficient systems and equipment in their design for new construction and/or major renovation projects. Since the Company services building owners of different areas and size, the New Construction product offers two core components:

1. Energy Design Assistance (EDA)
2. Energy Efficient Buildings (EEB)

Both components are available to non-residential customers in Public Service's electric and natural gas service territory.

1.Energy Design Assistance

The EDA offering provides a source of energy expertise to encourage energy efficient building design and construction practices. EDA offers design assistance in support of integrated design process by providing comprehensive computer modeling of the planned design, funding to offset the cost of design time associated with the increased energy analysis, financial incentives to improve the cost-effectiveness of a package of energy-efficient measures, and field verification to ensure that the strategies are installed per the design intent. Public Service covers the average energy modeling cost of an EDA project for customers.

According to *Best Practices Benchmarking for Energy Efficiency Programs,*[50] it is crucial for new construction DSM products to engage early in the design process and utilize integrated design modeling. The report states that, "Integrated design adds value because cost-effective energy savings opportunities decline as the project progresses through the various design stages." EDA uses computer energy models and a well-established, collaborative method for exchanging information with design professionals, contractors, developers, and building owners throughout the integrated design process. Important information is provided at critical points in the design process about the value and application of strategies for reducing peak demand and energy use. By analyzing integrated systems in the beginning of the design process, customers can make a building significantly more efficient, more comfortable for the occupants, and less costly to operate in the future.

In addition to technical assistance, Public Service provides financial incentives to building owners to improve the cost-effectiveness of energy efficient materials and equipment. Incentives are paid only after a verification process is completed, which typically occurs within two months of building occupancy. Verification ensures that the measures were installed as proposed, and provides an added degree of confidence in the project's calculated energy savings.

EDA offers two tracks for customer involvement:

[50] *National Energy Efficiency Program Best Practices Study*, Quantum Consulting Inc., Dec. 2004, pg. NR8-2. Available: http://aceee.org/files/proceedings/2004/data/papers/SS04_Panel5_Paper21.pdf.

Basic/Express Track
The Basic track is for Public Service customers interested in the opportunity to participate in a collaborative design process and identify energy savings opportunities using new technologies and energy methodology. The following requirements apply to the Basic track:

- Square footage: Greater than 520,000 square feet (new construction, major renovation or addition)
- Design phase: Schematic design or early design development
- Energy Savings: 15% peak demand savings and 15% natural gas savings minimum goals are required to be accepted into the basic track.

Enhanced Track
The Enhanced track is for Public Service customers interested in obtaining sustainable building certifications, such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®).[51] The Enhanced track allows for further analysis in daylighting, lighting, and mechanical system comparison and building orientation. The following requirements apply to the Enhanced track:

- Square footage: Greater than 520,000 square feet (new construction, major renovation or addition
- Design phase: Pre-design or early schematic design
- Energy Savings: 30% peak demand savings and 15% natural gas savings minimum goals are required to be accepted into the enhanced track.

Public Service administers EDA using third-party implementers to help identify product candidates, facilitate meetings with the design teams (including the owner), and complete energy modeling activities. Energy modelers are chosen based on a set of qualification criteria to become a third-party implementer of EDA services. Qualification opportunities are open as Public Service deems appropriate. Third-party implementers are paid on a pay-for-performance basis.

From 2007-2015, EDA has achieved approximately 177 GWh in savings. Acceptance into the Colorado market is strong given the improvements in the economy. All segment types can participate in EDA; however, many of the projects fall in the sectors of office, schools, retail, multifamily and healthcare.

2.Energy Efficient Buildings
The EEB offering is intended to provide a simplified approach to optimizing energy efficiency options in new construction or major renovations. This component addresses the portion of the new construction market not suited for the full-scale energy modeling offered through EDA. Projects must be a minimum of 105,000 square feet. Projects are also generally less than 70,000 square feet and have passed the schematic design stage of new construction. However, any size project above 105,000 square feet may qualify.

[51] USGBC, LEED, http://www.usgbc.org/leed.

Focusing on the needs of small building owners, the EEB offering provides a comprehensive list of typical energy efficiency measures that can be incorporated into the new/major renovation building design, as well as the rebate amount available for each measure. Incentives are provided for heating and cooling, lighting, building envelope, electric motors, refrigeration and custom opportunities. Customers will receive a rebate tailored to their building after the project has been constructed and onsite verification completed. From 2010-2015, EEB has achieved approximately 20.6 GWh in savings.

Public Service administers EEB using both internal and external resources to review the calculations and rebates, and verify installation. The EEB offering is managed by a third-party implementer to assist the customer with the EEB process.

B. Targets, Participants & Budgets

Targets and Participants

The EDA energy savings targets were estimated based on the average energy savings of participating buildings when compared to the usage of a baseline building. The baseline building is defined as a building compliant with the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1 standards, or the local jurisdiction's code, whichever is more stringent. New code adoption only impacts new EDA project starts. Since the sales cycle for EDA is typically two to four years—from project initiation and design to the completion and occupancy of a physical building—many of the projects expected to finish in 2017 have already been identified by the Company and third-party implementers.

Participation was estimated using actual historical product data.

Budgets

Once targets were established, the budget was developed based on historical cost and participation information. Average project modeling drives the budget, construction incentives, measurement and verification (M&V), and promotional expenses. The following are the specific budget drivers:

- *Consulting Payments:* Much of the product delivery budget is associated with the cost of modeling for customer projects. Modeling costs are estimated to be approximately $260 per kW saved for the Basic track and $300 to $400 per kW saved for the Enhanced track. Modeling costs are then split between the year modeling begins and the year in which the project will be completed due to final as-built modeling being used in rebate calculations. There are also minimal dollars allocated for EEB for a third-party implementer.
- *Incentives:* Incentives are determined by establishing a dollar value per participant at the appropriate rebate level.
- *M&V:* Completed in two steps for the offering and described in the M&V section of this Plan. Cost estimates are based on construction documentation and site review and are analyzed on a per project basis. Verification costs, on average, range between $4,000 and $10,000 per project.
- *Promotions, Advertising and Customer Education:* Promoting the product through specific advertising campaigns, trade shows, and training opportunities is an important

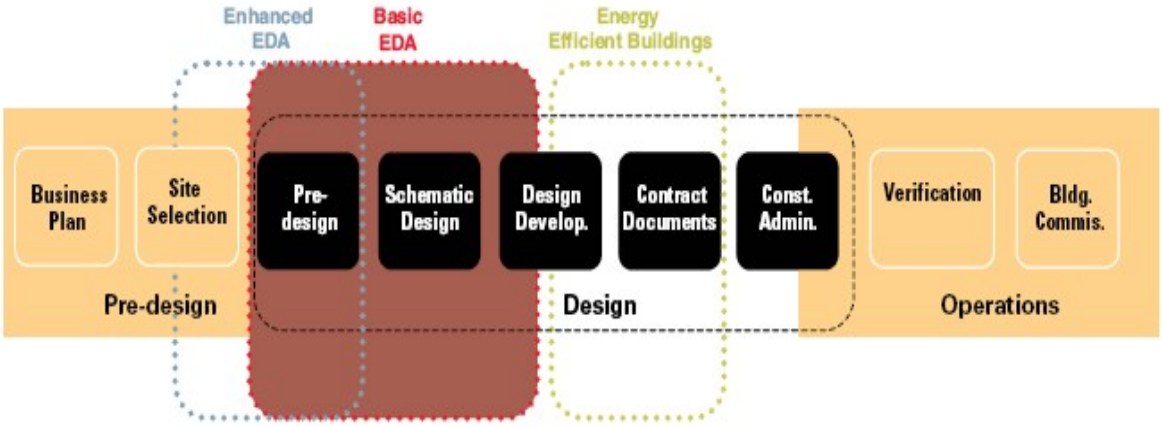
part of New Construction and aids in shifting the market towards higher efficiency. As such, historical data was used to determine the appropriate level of expenditure –on product marketing.

C. Application Process

The rebate application process differs between EDA and EEB.

Energy Design Assistance
The application process for EDA is more involved than for prescriptive products and follows the design schedule of a new construction project as outlined in the following diagram.

Building Design Process



The average time frame for project completion can range from two to four years depending on project schedules. For example, projects beginning modeling in 2017 will likely be completed in 2020 or beyond.

The application steps for the product include:

1. *Application Submittal:* Each project is evaluated by Public Service and the third-party implementers to ensure the project meets eligibility requirements. Customers who are interested in participating in the product must meet the design schedule requirements. Once approved to participate in the EDA offering, the customer receives an email approving the project and explaining next steps.

2. *Introductory Meeting:* An introductory meeting with the customer, design team, the third-party implementer, the Public Service Account Manager, and other key parties, takes place within two weeks of approval, depending on the design schedule. This meeting sets the tone for the collaborative approach, by explaining how the process works, who is involved, and what results should be expected. Initial project details, such as baseline systems, are collected during this meeting.

3. *Preliminary Analysis:* Using project details and costs from the design team, the third-party implementer begins the modeling process. Analysis is completed using a whole-building energy simulation computer program. Modeling software and protocols are established by Public Service, with reference to ASHRAE 90-1 standards, or the local jurisdiction's code, whichever is more stringent. Further analysis under the Enhanced track, if applicable, is also completed using the relevant modeling program and code base.

   Within this analysis, different energy efficiency opportunities are explored that fit into the project criteria—payback analysis, energy expectations, and original design strategy. A meeting is then held to review these strategies to find the ones that meet the original project criteria and which ones should be considered moving forward.

4. *Final Energy/Strategy Analysis:* Energy efficiency opportunities are then packaged together in design alternatives to show expected building energy savings, paybacks and incentives. A whole building approach is used to identify the net effect of multiple strategies on a project. This approach provides opportunity for more energy savings impact, by trading less effective ideas that may be in the budget for more effective, new concepts. The packaging of design alternatives also provides protection against pitfalls in the value-engineering phase of the design/construction process, which typically cuts individual elements of projects based on their first-cost and impact on the tangible elements of the building, with little regard for ongoing energy use. These energy alternatives are then presented to the design team and the customer to choose the best approach for their project.

5. *Construction Document Analysis:* Once the design team completes construction documents (CDs), a third-party implementer reviews the CDs and adjusts the energy model as needed. This energy model is used to determine the expected incentives from Public Service and to verify compliance with the energy savings intent of the customer. A review of the CD energy analysis is completed before construction.

6. *Verification:* The final step in the EDA offering occurs when Public Service completes an onsite verification of the energy alternative addressed within the energy model. Equipment and systems are logged to evaluate performance variables as appropriate to verify consistency with modeling assumptions. The actual results are compared to the estimated savings to determine the final customer rebate.

<u>Energy Efficient Buildings</u>

Customers may hear of the EEB offering through several channels, including Account Managers, the BSC, architects and engineers, general contractors, or equipment trade partners. The application process is similar to other Public Service prescriptive products; however, preapproval is required to allow for calculations of energy efficient measures, review of construction documents for verification of project design, and for final verification of actual installation.

The first step in the process is for the customer to submit a preapproval application and agreement to Public Service. Once received, Public Service will review the project to confirm the project timeline, building square footage, and customer interest in energy efficiency options. Once the application is preapproved, the customer will receive an email from Public Service

explaining the terms of the EEB offering and processes. An introduction meeting invitation will be extended to the customer to provide energy efficiency advice. The building owner will then submit the project data throughout the construction of the project, and upon completion, for review by Public Service. The customer will receive the final construction rebate once the project and onsite verification have been completed.

D. Marketing Objectives & Strategies

The New Construction product is primarily marketed through the Company's sales team and external third-party implementers to reach architects, engineers, general contractors, and Public Service customers, as detailed below. The Company fosters a collaborative approach, meeting with design teams to show how the product works and how it is beneficial to customers. Marketing strategies used within the product scope include trade shows, electronic newsletters, face-to-face meetings, advertising, and participation with various trade organizations including American Institute of Architects, Association of General Contractors, US Green Building Council, and ASHRAE. A secondary market is building owners and developers. The EEB offering, on the other hand, is primarily marketed to developers and customers.

Primary Market – General Contractors, Architects, Mechanical and Electrical Engineers:

- Implement energy efficiency
- Influence customer/developer decisions
- Trusted by owner
- Often suggest New Construction product to owners and developers
- Key to actual inclusion of strategies and cooperation

Secondary Market – Owners and Developers:

- Make initial decision on budget
- Hire and contract with an architect, engineers, and general contractor(s)
- Initiate conversations on energy efficiency
- Make final decision on equipment choices
- Key to moving general contractors to energy efficiency strategies within a limited budget

Public Service continually tries to improve and update the information available to customers on the website and/or for events. There are several pieces of collateral used for the New Construction product:

- *Product Feature Sheet:* explains the features and the benefits of the product.
- *Case Studies:* provides examples of how various customers benefited from participating in the product.
- *Process Flow Chart:* detail information on the product processes.
- *White Papers:* explain different options for energy efficiency in lighting, heating, cooling, envelope, and other measures.

The EEB offering provides Public Service with the opportunity to conduct a larger marketing effort for New Construction. Several strategies are used, such as:

- *Product Feature Sheet:* Explains the features and the benefits of the product
- *Trade and Customer Seminars:* In-person opportunities to educate customers and trade partners on the benefits of new construction; an important part of the marketing strategy.
- *Conferences and Exhibits:* In-person expertise to help customers determine what product best fits their needs, as well as guidance on the EEB and EDA processes.
- *E-newsletters:* Another avenue to educate the market on the product and benefits of reviewing new construction projects for energy efficiency opportunities.

E. Product-Specific Policies

The following policies are in place for the New Construction product:

- *Natural Gas Impacts.* In taking the whole building approach, there are times when an efficiency measure may cause a decrease in one fuel consumption, but an increase in consumption of another fuel. In these situations, Public Service will account for both the decreases (energy savings) and increases in fuel consumption and will issue the rebate accordingly.
- *Completion of several opportunities.* The EEB offering will require installation of new equipment in both the electrical and mechanical sections of the building. Buildings that only require adjustments to one "section" will be referred to the Company's other prescriptive products.

F. Stakeholder Involvement

Customers, trade allies, and other stakeholders are engaged at the project level. Feedback is garnered individually from participants and when feedback trends are identified, Public Service will develop recommended changes for consideration in product design. If it is a small change that does not require a 60-Day Notice, then it is typically discussed internally, and possibly with a few key trade allies and, if deemed acceptable, implemented. More significant product changes may involve review by external technical consultants or other third-parties, and would be submitted via 60-Day Notice (if required) and/or presented at a quarterly DSM Roundtable Meeting.

The Company continues to coordinate with other utilities and organizations to improve and effectively deliver the New Construction offerings. In addition, surveys are used to gather feedback from participants to continually improve the product.

H. Rebates & Incentives

The EDA offering covers energy modeling services valued at an average of $25,000 per project. Public Service also reimburses design team members to offset the incremental cost of their participation from $84,000 to $12,000 per project, depending on the square footage of the

building. The EEB offering covers analysis of measure opportunities valued at an average of $3,300 per project, and provides both prescriptive and custom rebates for measures above code.

In addition to energy modeling and analysis, Public Service provides financial construction incentives to building owners to improve the cost-effectiveness of the chosen energy efficiency measures. Customer incentives are based on demand and energy savings set at a base rate of $400 per kW saved and $0.04 per kWh saved. In addition, a natural gas savings rebate of $4 per dekatherm saved is available.