

Custom Application - Determining the Baseline

To provide maximum flexibility for customers, Dominion Energy South Carolina offers financial incentives for complex and site-specific cost-effective projects that go beyond the energy conservation measures (ECMs) addressed by the standard prescriptive applications. The first step in the application process is to establish the appropriate starting point or baseline from which to compare energy consumption, in order to perform the necessary energy calculations for a Custom project. Dominion Energy program staff will work closely with customers and their contractors to determine if the baseline is acceptable. Several methods can be used to determine the baseline for a given project. Each method is subject to some degree of interpretation by our team. However, closely examining the intent of the Custom application (retrofit, new construction or major renovation or end of useful life) will usually point the applicant in the right direction. Program staff is also available to discuss projects and assist applicants in determining the appropriate baseline for their project. Following are the general guidelines for the common project types.

For Custom projects, financial incentives are available to cover up to 50% of the labor and material/equipment costs for retrofit projects or up to 75% of the incremental material costs for new construction projects, major renovation projects where the customer has had all the equipment, fixtures and systems removed; and projects where the existing equipment or systems are at the end of their useful life. For all project types the incentive is capped so the project's post-incentive payback is not less than 1.5 years. These incentives are meant to encourage customers to go beyond what they would have without incentives.

Retrofit Projects

Retrofit projects involve upgrading existing equipment which is in working condition and is not at or near the end of its useful life. Retrofit projects only occur in existing facilities and typically involve building spaces or industrial processes which are not being significantly modified or renovated. With few exceptions, retrofit projects typically involve one-for-one replacement with like-kind equipment or improvements resulting in more efficient operation of existing equipment. Applicants typically undergo retrofit projects strictly on the basis of potential energy savings. In these cases, the resulting energy savings associated with upgrading to higher efficiency equipment outweighs the benefit of keeping the existing equipment in service. In short, retrofit projects are not "essential" for the continued operation of a facility or process.

Since replacement of the affected equipment is being pursued strictly for energy savings purposes, the baseline for energy calculations is typically the existing equipment or system. Applicants must describe the existing system and indicate how the system is currently operating. The baseline for retrofit costs is typically zero since the improvements are not necessary for continued operation. Dominion Energy will review the proposed project and all associated energy savings and cost data to determine if the project is cost effective and what incentives are available. We reserve the right to adjust project costs based on experience and industry practice as well as limiting costs to only those investments necessary to achieve the electrical energy savings.

New Construction, Major Renovation and End of Life Projects

New construction, major renovation and projects where the equipment or systems are at the end of their useful life are unique in that if the efficiency improvement is not achieved at the time of new equipment or system installation, it is unlikely to be achieved in the near term. The useful life for a piece of equipment or a system is determined by program guidelines. It is not based on the on-going operation of existing equipment.

The equipment or systems for these projects are installed because they are necessary for the proper operation of the facility or industrial process. Therefore, these types of projects require a different approach than retrofit projects in terms of baseline determination, applicable costs and energy savings calculations. All measure installations must comply with all applicable codes required at the time a construction permit is submitted or when the Dominion Energy Custom application is submitted for projects that do not require a permit. For efficiency opportunities not governed by efficiency codes or standards, industry practices or demonstrated consumer practice are typically used to establish the baseline. The baseline for these projects is NOT the existing equipment or systems. The Custom baseline case is determined and generated for each project individually, based on codes and standards. Whole Building Solutions always use ASHRAE 90.1 2007 as baseline.

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The aim of the Custom offering is to encourage a higher level of equipment efficiency than the baseline. Therefore, all energy and cost calculations are performed by comparing the baseline equipment or system to the proposed high-efficiency equipment or system. Applicants must provide detailed information on the baseline system, including:

- Number of existing units, if any
- Detailed description of the baseline equipment including system capacity, load profiles, capacity, production rate and hours of operation
- Manufacturer data sheets with equipment performance ratings (BHP, CFM, PSI, kW, Efficiency rating, U- value, etc.). Provide nameplate data if manufacturer data sheets are unavailable
- Part load performance data if applicable
- Description of controls and sequence of operation

To determine the costs for the proposed equipment or system, applicants may use RS Means or similar methodology to estimate baseline system costs, provided the method is indicated and consistently applied throughout the application. Actual cost estimates are required for high-efficiency systems. Program staff reserves the right to adjust project costs based on experience and industry practice.

Summary

The baseline is the starting point for a Custom application, both in terms of energy savings and project costs and is a programmatic determination.

Baselines are different for retrofit projects versus new construction, major renovation and end of life equipment replacement projects as summarized in Table 1.

Table 1. Custom Baseline by Project Type

	Retrofit	New construction, major renovation and end of life*
Baseline	The existing equipment/system	Code or standard practice
Baseline Energy	Current consumption	Minimum-efficiency compliant equipment or system usage
Baseline Cost	Zero	Minimum-efficiency compliant equipment or system usage

A more detailed matrix for determining Custom baselines is presented in Table 2 on the next page. It will assist in determining the baseline by interpreting the Custom program's definition of project type, which is based on age of equipment and circumstances surrounding the project.

Those interested in Custom incentives are encouraged to attend EnergyWise for Your Business training to learn more details on the Custom application and its requirements. The trainings occur throughout the year and are offered at no charge. Program staff is also available to work with customers and service providers throughout the process.

*Whole Building Solutions always use ASHRAE 90.1 2007 as baseline.

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Table 2. Detailed Custom Baseline Matrix - By Project Type

	Retrofit	End-of-Useful-Life	New Construction	Major Renovation
Status of existing equipment	Existing equipment has useful life remaining; replacement of equipment is not necessary for the continued operation of the facility or process	Existing equipment is at the end of its useful life	n/a	Equipment has been removed
Motivation to go to high-efficiency equipment	More efficient equipment will produce energy savings that exceed the inherent residual value of the existing equipment	A time-dependent situation: must install code compliant equipment; incentives motivate to go beyond the "minimum requirements" of code	A time-dependent situation: must install code compliant equipment; incentives motivate to go beyond the "minimum requirements" of code	A time-dependent situation: must install code compliant equipment; incentives motivate to go beyond the "minimum requirements" of code
What if more efficient equipment is not installed?	Building can continue to function as is	Lost opportunity for reducing operation costs	Lost opportunity for reducing operation costs	Lost opportunity for reducing operation costs
What are the key references for the baseline?	The performance of the existing equipment as currently operated (vs. the performance of the same style of equipment, but with a high-efficiency designation)	The performance of the minimal equipment required by code (vs. high-efficiency versions of that equipment)	The performance of the minimal equipment required by code (vs. high-efficiency versions of that equipment)	The performance of the minimal equipment required by code (vs. high-efficiency versions of that equipment) Note: The type or age of equipment removed from the building is NOT a consideration.
Incentive levels for cost-effective measures Note: Actual incentive percentages and amounts may vary from project to project.	Up to 50% of the labor + material/equipment costs directly associated with the more efficient piece of equipment, limited to a post- incentive payback of 1.5 years.	Up to 75% of the incremental material/ equipment costs for the more efficient equipment, limited to a post- incentive payback of 1.5 years.	Up to 75% of the incremental material/ equipment costs for the more efficient equipment, limited to a post- incentive payback of 1.5 years.	Up to 75% of the incremental material/ equipment costs for the more efficient equipment, limited to a post- incentive payback of 1.5 years.



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