2017 Data Center Energy Efficiency Program (DCEEP)

Market Transformation Program

Program Manual
Version 3.0

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Updates to this manual and program enrollment materials will be provided at

https://centerpoint.anbetrack.com/

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1 General Program Guidelines

1.1 Introduction

The Data Center Energy Efficiency Program (DCEEP) was developed by CenterPoint Energy to provide complimentary support through a combination of tools and services for participants who complete projects resulting in peak electric demand and consumption savings. DCEEP is designed to help data centers identify energy efficiency opportunities in existing and newly planned facilities, educating Program Participants on current best practices, and provide monetary incentives to implement these projects. CenterPoint Energy has contracted with Willdan Energy Solutions to implement DCEEP and the non-cash incentive services **to participants at NO COST.**

This is a voluntary program that offers objective, third-party consulting on best practices in the areas of energy usage and energy efficiency. Participants in DCEEP must meet minimum eligibility criteria, comply with all program rules and procedures, and submit documentation describing their projects.

Section 1 provides a general introduction to DCEEP, including an overview of program features and guidelines, and background information. Section 2 provides more detail on the program process. Section 3 explains project review and measurement & verification (M&V) process and requirements. Section 4 lists out the answers to some possible FAQs, and Section 5 define key terms used in this program manual. All program information, including application materials, will be available on the World Wide Web at DCEEP website, https://centerpoint.anbetrack.com.

1.2 Background

In 1999, the Texas Legislature passed Senate Bill 7 (SB7), which restructured the state's electric utility industry, and required each investor-owned electric utility to reduce Texas customers' energy consumption through standard offer programs or limited target market transformation programs. In March of 2000, the Public Utilities Commission of Texas (PUCT) passed Substantive Rule §25.181, leading to the CenterPoint Energy Programs that were developed in 2006 to comply with State's energy efficiency goals to reduce peak electric demand. In September of 2007, House Bill 3693 was passed and expanded these energy efficiency goals.

In 2008, The Public Utility Commission of Texas adopted the repeal of §25.181, relating to Energy Efficiency Goal, and §25.184, relating to Energy Efficiency Implementation Project, and adopted a new §25.181, relating to Energy Efficiency Goal. This rule was further amended in 2010 and 2012. The current rule was adopted in October 2012 to incorporate the changes from the 82nd Legislative Session, resulting from the passage of Senate Bills (SB) 1125, 1150, 1434, and 1910. These CenterPoint Energy Programs are now in their 9th year.

1.3 Program Objectives

The 2017 Data Center Energy Efficiency Program (DCEEP) is specifically designed for commercial

customers that have a dedicated data center, server room or server closets for specialized IT-related equipment such as data storage, web hosting and telecommunications.

The Program aims to assist data center owners and operators in the reduction of energy costs through practical technical assistance and cash incentives, while recognizing the importance of sustaining reliability and maximizing uptime. Program objectives include:

- Encourage delivery of energy efficiency products and services to the target market segment(s).
- Transform these markets over time by addressing specific barriers that hinder adoption of energy efficient technologies and practices.
- Provide a suite of supporting services to facilitate the implementation of energy efficiency projects.
- Create a simple and streamlined program process to stimulate strong participation from the targeted markets.
- Reduce peak demand (kW) and energy consumption (kWh).

1.4 Program Offerings

DCEEP, in addition to CenterPoint Energy electric distribution customers or customer representatives (Program Participant), involves the Program Administrator (CenterPoint Energy) and the Program Implementer (Willdan Energy Solutions or Willdan). The roles and responsibilities of each are defined in the "Program Roles & Responsibilities" section.

DCEEP seeks to accomplish these objectives through a variety of services offered to the Program Participants, which include:

- **Technical Assistance** that helps understand, identify and implement energy-saving projects, and develop a plan to make energy efficiency improvements based on the industry's latest best practices
- **Technical Training** that helps data center operators gain advanced technical knowledge and help address hesitation to making energy-efficiency improvements caused by risk aversion
- **Financial Incentives** for completed energy efficiency projects based on verified peak demand reduction and annual energy savings that reduce payback period of investment
- **Savings Verification** that proves energy savings after projects are completed

Other program services may include: benchmarking of current energy use, facilitation of an energy master planning workshop, identification and evaluation of opportunities for energy efficiency measures, project implementation and communications support. Program staff works with Program Participants to determine the most appropriate set of services to offer in order to address both immediate and longer-term needs.

While DCEEP does provide some technology recommendations, it does not require specific technologies or end uses. Instead, DCEEP provides a framework through which the Program Participants can receive incentives for implementing and installing a wide range of measures at their sites.

Note that neither CenterPoint Energy nor Willdan will directly market any energy efficiency-related products or services to its Program Participants. Entering into an agreement with CenterPoint Energy does not imply

CenterPoint Energy's endorsement or approval of any products or services. CenterPoint Energy or Willdan makes no representation of the benefits of any particular technology or energy efficiency measure eligible for incentives under this program. The selection of an energy efficiency measure is at the discretion of the individual customer.

1.5 Program Roles & Responsibilities

1.5.1 Program Administer

CenterPoint Energy (Program Administrator) has contracted with Willdan Energy Solutions (Program Implementer) to implement DCEEP. Program Administrator and Program Implementer together serve as the Program Administer, and are responsible for:

- Conducting outreach to potential program participants
- Approving program participants eligibility and enrollment
- Providing some or all of the following services, based on the specific Customer's needs and savings potential, as assessed by Program Administer: energy performance benchmarking, energy assessments and technical assistance
- Recommending higher efficiency options
- Conducting and/or assigning formal on-site pre-installation inspections of eligible projects to approve kW and kWh savings and incentive amounts
- Reviewing and approving Project Application Forms
- Calculating savings
- Authorizing and issuance of incentive payments for completed projects

1.5.2 Customer

For a specific facility to be eligible for financial incentives in the program, its **ESI ID** (noted on the electric bill) must be provided in order to verify electric service provided by CenterPoint Energy. Each CenterPoint Energy electric distribution customer has an ESI ID which begins '100890'. To participate in the CenterPoint Energy Programs, Program Participants are asked to fulfill a combination of the following requirements:

- Submit Project Application Forms/Letter of Authorization for the Request of Historical Usage Information Form
- Commit to the terms of the Memorandum of Understanding (MOU)
- Provide a current W9
- Provide site information and information on any potential Energy Conservation Measures (ECMs)
- Provide documentation on project cost
- Exert its best efforts to approve, fund, and install selected cost-effective energy efficiency projects identified through DCEEP before the last day of the program year
- Notify Program Administer when projects are completed
- Provide access to project facilities and ample lead time both before and after project completion for any inspections that are required to verify electric demand and energy savings from a specific project; new construction projects do not require any inspections prior to project completion.

- Allow the Program to share the facility's name, energy efficiency product information, savings information with entities such as utilities, Public Utilities Commission of Texas (PUCT), and federal, state, or local entities for audit and evaluation purposes. Where Program Participant grants permission, the Program may also use the facility's name and facility information to promote the Program to the general public. (Information deemed confidential will be held in confidence to the extent possible.)
- Where Program Participant grants permission, the Program may also use the facility's name and facility information to promote the Program to the general public.
- Warranty of Work

a. Vendor represents and warrants that (a) the Work will be performed in accordance with the Contract; (b) Vendor shall use sound and professional principles and practices in accordance with consistently accepted industry standards in the performance of the Work hereunder; (c) performance of the Work by Vendor Personnel shall reflect sound professional knowledge, skill and judgment; and (d) Vendor shall, and shall cause Vendor Personnel to, perform the Work in accordance with applicable laws, rules and regulations, and required state and local licenses and permits.

b. Vendor represents and warrants that the Work covered by the Contract will (a) be suitable for the purpose intended and for any purposes for which its suitability is represented in writing by Vendor; (b) be free from defects in design, workmanship and materials; (c) conform to the Drawings and Specifications supplied to Vendor, if any; and (d) if installed by Vendor, be properly installed and activated. Vendor shall correct any defects in the Work, and all repairs, replacements, modifications or adjustments required under this warranty shall be at Vendor's expense, including transportation, shipping and incidental expenses.

c. Remedies for breach of the warranties in this section (Warranty of Work) may include, at Company's sole discretion and in addition to all other remedies available to Company at law or in equity, the repair or replacement of, or the reimbursement of the purchase price for, the applicable Work.

d. The warranties set forth in this section (Warranty of Work) are cumulative and in addition to any other warranty provided by law or equity.

Note that DCEEP will not reimburse Program Participants for any costs it may incur by participating in DCEEP. Please note that any financial investments a Program Participant makes through the course of participating in DCEEP is for the energy efficiency measures they elect to pursue and NOT for any of the services that are provided through DCEEP. Financial incentives for demand and energy savings are paid to Program Participants upon verification and approval of eligible, completed energy efficiency projects.

1.6 Program Contacts

Program Administer will be available to assist Program Participants with comments, concerns, inquiries or complaints via mail, telephone and email.

CenterPoint Energy	Willdan Energy Solutions
Yolanda Slade CenterPoint Energy 1111 Louisiana St, 9th Floor Houston, TX 77002 (713) 207-7762 yolanda.slade@CenterPointEnergy.com	**Jessy Shao** Willdan Energy Solutions 950 Threadneedle, Suite 275 Houston, Texas 77079 (346) 888-2532 jshao@willdan.com

1.7 Eligibility

1.7.1 Program Participant Eligibility

CenterPoint Energy DCEEP targets both existing and newly constructed facilities for customers who own and operate either stand-alone data centers or those contained inside other facilities. Broadly speaking, "data centers" are defined as facilities designed to accommodate dense arrangements of computer equipment and associated networking, telecommunications, storage and auxiliary equipment required to store, process, manage, and disseminate data and information. Eligible customer may be a data center which is served by a dedicated cooling and power delivery and conditioning equipment such as network operations center, colocation, enterprise data center, etc., or distributed IT equipment that is either housed in facilities without dedicated cooling and power delivery systems, or simply housed in commercial facilities such as server room or server closet.

It is the goal of DCEEP to serve all classes of data center customers located within CenterPoint Energy's service if they are:

- Non-residential class or
- Commercial and industrial customer taking service at a metered point of delivery at a distribution voltage (<69 kVA) under an electric utility's tariff during the prior calendar year
- non-profit/government transmission class customer

A customer (or Program Customer, as described above) is defined by a single Tax ID number. Multiple locations of one organization are thereby considered a single customer, regardless of how many CenterPoint Energy account numbers they may have.

1.7.2 Project Eligibility

A project is defined as a set of proposed or installed measures at an eligible site or combination of sites. All projects must meet the following requirements:

- Project incentives may be subject to minimum kW and/or kWh savings requirements, which will be determined by the Program Administer on a case by case basis.

- If the measures and sites proposed are all similar, one project may involve the installation of measures at multiple program participant sites. For example, installation of measures at a chain of clinics may include more than one Program Participant site, but may constitute a single project. These sites would share a common Measurement and Verification (M&V) plan. Proposed measures must be installed at all the sites before the first payment will be made. There are advantages and disadvantages to bundling project sites in this manner. Contact the Program Administer for more information.

- For projects with incentives paid on the basis of verified demand and energy savings, peak demand savings must be measured within the summer peak demand period. M&V of energy savings may continue for up to 12 months and carry into the following year.

- Comprehensive projects that include a range of measure types are encouraged.

- New construction projects must demonstrate compliance with local, state or federal codes, whichever is more stringent. Projects using the Energy Cost Budget Method to demonstrate code compliance will be considered for program participation on a case-by-case basis.

1.7.3 Eligible Measures

The energy conservation measures listed below are eligible in DCEEP.

Cooling equipment and systems

- Cooling equipment installation: chillers, cooling towers, compressors, condensers, evaporative coolers, pumps, fans, and in-rack and in-row cooling equipment
- Cooling control systems: wired or wireless sensors, control units, control system integration
- Electronically-commutated (EC) motors
- Variable speed equipment: Variable frequency drives (VFDs) for chillers, chilled water pumps, condenser water pumps, and supply fan motors
- Air-side and water-side economizers
- Humidification equipment upgrades
- Hot aisle/ cold aisle containment
- Demand control ventilation (DCV)
- Airflow management improvements: blanking panels, low pressure drop panels, baffles, return air plenum extensions, and removal of under floor obstructions
- Low- and no-cost optimization such as set point changes and reset strategies, sequencing, balancing, etc.

Lighting equipment

- Lighting equipment installation: high-efficiency fluorescent lighting, compact fluorescent lamp (CFL) with hard-wired ballasts or permanent socket conversions, high intensity discharge (HID) fixture, Light Emitting Diode (LED)
- Lighting controls to reduce operating hours

Power delivery and conditioning systems

- Power delivery and conditioning equipment upgrades: uninterruptible power supply (UPS), power distribution unit (PDU)
- Generator block heaters in lieu of electric resistance heating

Information technology (IT) equipment and systems

- Server and storage optimization, e.g., virtualization, consolidation, solid state storage, de-duplication, compression, disc management, and thin-provisioning
- Premium efficiency IT equipment installation

Other custom measures not listed above may be eligible if they provide measurable and verifiable peak demand or energy consumption savings. Program Administer will coordinate with the Program Participant to determine the measure eligibility, baseline efficiency standard, saving calculation method and M&V approach. All M&V plans must comply with industry standard protocols. Please refer to the later sections on Measurement and Verification Guidelines for both Retrofit and New Construction projects for further information on preparing and implementing an M&V plan.

1.7.4 Ineligible Measures

Measures that are NOT eligible for an incentive include the following:

- Measures that result in negative environmental or health effects
- Measures that involve fuel-switching to electric
- Measures that receive an incentive through any other energy efficiency program offered by CenterPoint Energy except for Commercial Load Management Program
- Redundant equipment
- Used or rebuilt equipment

1.7.5 Efficiency Standards

CenterPoint Energy has designed DCEEP to encourage electric energy-efficiency improvements that exceed the efficiency gains typically achieved in retrofit or replacement projects. Consequently, new equipment installed through DCEEP must meet applicable new equipment minimum efficiency standards and demand and energy savings credit will be based only on reductions that exceed current industry accepted baseline standards as discussed in Section 3.2.

1.7.6 Conflicting Standards

In case of a difference between processes or procedures described in this manual and Public Utility Commission of Texas (PUCT) rules and regulations including the Texas Technical Resource Manual (TRM), the PUCT requirements shall supersede this manual.

1.8 Incentives

There are a variety of incentives available to Program Participants in order to assist with identification, evaluation, and implementation of eligible energy efficiency projects. Program incentives include a mix of cash and non- cash incentives as described below. Program Administer will work with enrolled Program Participants to determine the appropriate non-cash incentives to provide in addition to assisting with identification and development of projects that may be eligible for cash incentives.

1.8.1 Non-Cash Incentives

- **Technical Assistance & Project Identification:** Technical support is provided to help Program Participants identify and evaluate energy efficiency opportunities in order to determine which projects are viable and to recommend high energy efficiency options.

- **Energy Performance Benchmarking:** The Program Participant's current energy use may be benchmarked by its power usage effectiveness (PUE), using total electricity data from the utility and IT equipment electricity usage from the Program Participant.

- **Energy Assessments:** Program Administer may perform assessments on eligible Program Participant's facility to help identify potential measures. The type of assessment offered will be determined solely by Program Administer based on the estimate of potential savings.

- **Technical Training:** Program Administer will provide technical training to the program participants to help data center operators gain advanced technical knowledge and help address hesitation to making energy-efficiency improvements caused by risk aversion.

1.8.2 Cash Incentives

DCEEP provides financial incentives, based on reductions in peak electric demand (kW) and energy consumption (kWh/yr) at a Program Participant's facility. These financial incentives help the Program Participant to "buy down" the incremental cost of purchasing more energy-efficient equipment and are meant to encourage adoption of construction and maintenance practices which will reduce energy operating costs. Program Participants electing to participate in DCEEP may apply for cash incentives within DCEEP only, and may not apply for those incentives in CenterPoint's other energy efficiency programs (e.g., Commercial & Industrial Standard Offer Program, etc.). However, Program Participants may participate in both DCEEP and CenterPoint Energy's Load Management Program, since there is no conflict or repetition of measures within these two programs.

1.8.3 Cash Incentive Rate and Limitation

The incentive rates in Table 1 and limitation apply only to projects implemented and funded in the 2017 program. Projects implemented in subsequent years will be subject to the incentive rates and limits specified in the DCEEP program manual of that year. For projects that require comprehensive M&V process associated with meter or monitoring system installation, Program Participants may choose to hire independent contractor or use M&V services offered through the program. Incentive rates for projects that utilize M&V services through the program will be decreased, but not to exceed 20% of standard incentive rate

Table 1: 2017 DCEEP Incentive Rates

Measure Category	Measure Description	$/kW	$/kWh
Cooling Equipment	HVAC Equipment Installation or Upgrade (CRAC, CRAH, Chiller)	$240	$0.08
	HVAC Equipment Installation (CRAC, CRAH)	$200	$0.06
	Motor, VFD Installation	$150	$0.04
Electrical Equipment	Power Distribution Unit/Uninterruptible Power Supply Installation	$150	$0.04
	Lighting Equipment Installation	$150	$0.04
IT Equipment	Premium Efficiency IT Equipment Installation	$100	$0.02

	Server Virtualization, Consolidation and Refresh	$100	$0.02
Capital Controls and Optimization	Air Side Economizer, Water Side Economizer, Hot/Cold Aisle Containment, Airflow Optimization	$160	$0.04
Operational Measures	Set points, Sequencing, Balancing, etc.	$20	$0.01
Other Custom Measures		$175	$0.05

Limitation

- To ensure that the cash incentives are available to multiple Program Participants, no Program Participant may reserve or receive more than $200,000 total cash incentives in a given budget year, unless authorized by CenterPoint Energy. An individual Program Participant may be party to multiple applications as long as the total incentive from all such applications does not exceed that maximum limit.
- The incentives shall also be capped at 50% of project cost for each measure. Program Participants are required to provide documentation on project cost.
-

1.8.4 Incentive Determination

As noted in the table above, financial incentives are based upon peak electric demand savings and annual electric energy savings. Peak electric demand savings will be reported as the maximum of either summer or winter peak demand (kW) but not both. The summer peak period is defined (no changes) as weekdays, between the hours of 1 P.M. and 7 P.M. from June 1 until September 30, excluding holidays. The winter peak period is defined as between the hours of 6 A.M. and 10 A.M. and 6 P.M to 10 P.M., during the months of December, January, and February, excluding weekends and Federal holidays. Energy savings are defined as electric energy savings over the course of one 12-month period.

1.8.5 Incentives Availability

Both the cash and non-cash incentive budgets available through DCEEP are limited. If the incentive reservations exceed the program budget for incentives, the program is considered fully or over-subscribed. In the event that project applications are submitted after DCEEP is fully subscribed, the project will be added to a project wait list.

Any Program Participant submitting projects that are unable to receive cash incentives in the current program year due to oversubscription may choose to continue with their installation without incentives or delay the project and reapply for incentive funds during the next program year when additional incentive budget becomes available.

1.8.6 Cash Incentives Payments

Any cash incentives received through DCEEP are paid directly to the Program Participant by Program

Administer after the project is completed, verified, and a post-installation inspection is conducted. Funds will be paid within the program year once the project is completed and verified.

Deemed Savings and Measurement & Verification Payments

Projects that utilize the streamlined deemed savings (refer to Section 3.5.2) approach will be paid 100% incentives upon installation completion, post inspection and savings verification. Projects that require M&V may be paid at 40% incentive upon installation completion and post inspection, and the remaining 60% incentives will paid after verification completion. If savings are less than anticipated, the second incentive payment will be adjusted accordingly. If a project installation is completed in one year and M&V is completed in the following year, the incentive rates will be paid at the program rates for the year the project installation was completed.

New Construction and Phased Payments

New construction data center projects present a particular program challenge due to the length of a project cycle. A new data center may involve a multi-year planning, engineering, and construction period. A new construction program acceptance may not be considered complete and eligible for incentive payment within a customary program authorization period.

New data centers often take several years of operation before reaching full "occupancy" – operators rarely install the full load of IT equipment in the first few years of operation. However, data center developers desire full payment of energy efficiency incentives as soon as an occupancy permit is granted (to recoup a portion of that investment by claiming the incentive as soon as possible).

In order to accommodate customer interest and also capture all data center energy savings, DCEEP offers incentive installment payments when thresholds are reached. Program Administer will review the construction and build out schedule with new construction applicants to determine an appropriate phasing structure. A typical phasing structure would include measurement, verification, and payment at the following increments: 25%, 50%, 75% and maximum expected completion of full design capacity.

2 Participation Process

This section provides information on participating in DCEEP including the program process, required submittals, and milestones. There is no financial commitment required to reserve incentives in DCEEP, though signing the Program Application Form does signify a commitment from the Program Participant that the included projects will be completed during the calendar year in which incentives are being applied for. A Program Participant who has not started a project by September 30th will be moved down to the bottom of the waitlist and the Program Participant next in line will be bumped up for incentive funds.

The stages for participating in CenterPoint Energy's Data Center Energy Efficiency Program are outlined below. Stages are broken into Pre-Install stages and Post-Install stages. An Initial Application should be submitted for all program projects so that the implementation team can assess the potential energy savings prior to making a project reservation. Projects without an Initial Application should be identified to the DCEEP team as soon as possible, and will be accepted on a project-by-project basis.

2.1 Pre-Install Stages

The following program stages occur pre-install:

- Initial Application Completion and Submittal
- Initial Application Review
- Pre-Install Review
- Initial Application Approval and Incentive reservation

2.1.1 Initial Application Completion and Submittal

The CenterPoint Energy Data Center Energy Efficiency Program application is available on DCEEP webpage at https://centerpoint.anbetrack.com.

To apply for program participation, Program Participants must:

- Submit the Program Applicant Form and the Letter of Authorization for the Request of Historical Usage Information Form
- Agree to the program terms and conditions stated in this Program Manual and the Memorandum of Understanding (MOU)
- Provide required supporting documents

Pre-installation applications should be submitted via eTrack https://centerpoint.anbetrack.com.

2.1.2 Initial Application Review

The Initial Application Review status is the core status where all Initial Applications reside when being processed by Program Administer. The team contacts the Program Participant to clarify details or obtain further information, to discuss the overall process and timelines, and to explain the process for inspections, if required.

If an application requires follow up or clarification, an administrative reviewer does the follow-up call and a technical reviewer checks to see if technical details are missing. Program Administer will contact the applicant to correct missing or unclear information. In addition to obtaining and completing necessary information, this process provides the Program Participant with a point of contact at Program Administer to use for future outreach, if necessary.

Once a project has moved into the pre-review stage, four (4) assessments must be reviewed for the project to move to the next stage; these assessments are outlined in Table 2 below. During each assessment the reviewer determines:

- The eligibility of the project
- The eligibility is under reviewing pending additional data collection
- The eligibility of the project is rejected or will not move to the next step.

Once a project has cleared all pre-install checks, funds can be reserved for the project.

Table 2: Pre-Install Project Assessments

	Pre-Install
Eligibility Check	Program Administer ensures that the Program Participant meets eligibility criteria prior to Application submission (e.g., utility bill, project minimums, project schedule). If questions arise regarding custom project eligibility, cross-program eligibility, etc.
Completion Check	Program Administer ensures reception of the accurate Program Participant contact information and that project completion date is within the program guidelines, including confirming signatures, estimated project completion date, and third-party information, if applicable.
Engineering Check	Program Administer ensures that the measures in the application match the work being done at the site and that the energy savings is justifiable. This includes incentive worksheets, complete custom savings review, project costs, cost-effectiveness analysis, and determination of M&V requirements. Refer to Section 3 for more information about Program Administer pre- and post-install project review.
Inspection Check	Program Administer ensures that the appropriate in-person pre-install inspection has taken place. For more on inspections, refer to Section 2.3. An application may be cancelled if the Program Participant begins work before pre-inspection is performed.
Check Results	**RESERVATION LETTER**

2.1.3 Pre-Install Review

The pre-install review process provides Program Administer with the opportunity to verify the existing

conditions at the site. In order to verify pre-existing conditions, pre-inspections are required for all custom data center measures. For more information on pre-install review, refer to Section 3. All inspections will be documented on the inspection report.

2.1.4 Initial Application Approval and Incentive Reservation

Once the findings of the pre-install review have been approved, Program Administer will reserve the project funds and send a reservation letter outlining the details of the project and deadline for completion. If required, Program Participant final review requirements and M&V plans will be included in the reservation letter.

Project initial application is approved under the condition that project installations will be completed by November 30th in the program year of the submitted Form. Project installations not completed by November 30th of the program year may forfeit the incentive funds that have been reserved for that project. Project installations that are not completed by November 30th will be allowed to re-apply for incentive funds for the following program year, under the same conditions listed above. Because program baselines and design can change from year to year, incentive amounts may change in the subsequent year.

2.2 Post-Install Stages

Once the project is installed, the following program stages will occur:

- Final Application Completion and Submittal
- Final Application Review
- Post-Install Review
- Final Application Approval and Incentive Payment

2.2.1 Final Application Submittal

Final applications (in the form of an updated pre-approval application) must be submitted within sixty (60) days of project completion and include the appropriate back-up documentation to verify the project is complete and meets the program requirements.

Program Participant agrees to submit to Program Administer a copy of the final invoice for equipment cost, labor, and all other costs associated with the project. If Program Participant uses internal labor and is therefore not invoiced for labor, Program Participant will submit a copy of the equipment invoice and an estimate of internal labor hours spent. Please note that only overtime internal labor cost is eligible when considering operational measure cost. Program representatives can provide Program Participant with guidance on submitting the appropriate project cost information and supporting documentation required to meet this requirement.

2.2.2 Final Review

Program Administer reviews final applications for eligibility and completeness. The final review process mirrors that of the pre-review, with the exception of an additional set of payment checks. Any changes in the application and project state (such as a change in incentive) are noted during this stage, and the Program

Participant is contacted to discuss and troubleshoot as necessary.

Table 3: Post-Install Project Checks

	Post-Install
Eligibility Check	Program Administer confirms that verified project scope and energy savings have not changed in any ways that contradict eligibility criteria.
Completion Check	Program Administer reconfirms application completion.
Engineering Check	Program Administer utilizes data gathered post-install to validate calculations of energy savings from the pre-install phase, making adjustments as necessary.
Inspection Check	Program Administer confirms that the appropriate level of inspection has occurred post-install. For more on inspections, refer to Section 2.3. If monitoring & verification is needed, M&V analysis completion will also be confirmed.
Check Results	**PAYMENT LETTER**

2.2.3 Post-Install Review

The post-install review process mirrors that of pre-install review, which allows Program Administer to verify the post conditions at the site. All projects will be subjected to post-inspections, for more information on post-install review, refer to Section 2.3.

2.2.4 Incentive Payment

Once the project has proceeded through post-install checks and has been approved for payment by Program Administer begins the incentive payment process. Program Administer will notify the applicant of intended payment via a payment letter following the guidance outlined below.

- The program is not under any obligation to pay more incentives than the amount reserved by the Project Application Form for any project.
- If greater savings are achieved than the amount reserved and budget is available, DCEEP has the option to pay Participant additional incentives.
- For additional details on how incentive payments are determined, scheduled, and paid, please see the “Incentives” section of the program manual.

2.2.5 Cancellation

If a project is cancelled, Program Administer records the reason for cancellation and sends a cancellation letter to the Program Participant and contractor notifying them of the cancellation status, and reason for cancellation.

The primary contact will be notified by Program Administer via telephone prior to formal cancellation letter. Any project that is cancelled will have a follow up call in three (3) months to determine if there is a way to move the project forward.

2.2.6 Waitlist

In the event that all incentive funding has been reserved, additional Project Application Forms submitted will be placed on a waitlist in the order that they are received by Program Administer. Program Participants will be notified of their project's position on the waitlist. If additional incentive funding becomes available, waitlisted projects will be approved in the order received until the funding is fully reserved.

2.3 Inspection Scheduling and Execution

2.3.1 Requirements and Objectives

Inspections may be held to accomplish the following:

- Verification of the pre-existing conditions of the property.
- Verification of the accuracy and quality of the project scope work described in the Application.
- Verification of equipment counts and the specifications of specific installed equipment (e.g., model numbers) or parameters of operation (e.g., set point temperatures).

A secondary objective of the inspection is to observe additional potential energy efficiency opportunities. When opportunities are observed, the inspector will inform the Program Participant while on-site, provide related collateral materials, and note the observations in the inspection report.

2.3.2 Inspection Scheduling

Pre-install and post-install inspections are scheduled before the reviews are completed in the pre-approval application and final application stages. The scheduling process is detailed below:

- Program Administer reviews all technical information and, if necessary, additional information is requested from the Program Participant or contractor.
- Program Administer develops specific instructions on what to inspect.
- Program Administer contacts the Program Participant to discuss inspection scheduling, review inspection activities, and determine which Program Participant and/or contractor personnel will be required on-site during the inspection.
- Program Participant must provide a knowledgeable representative to accompany the inspector as well as provide any equipment needed to verify installed measures.

2.3.3 Inspection Process

Prior to beginning an inspection, the inspector reviews the application, project schedule and other relevant information. The inspector should also collect the contact information of knowledgeable individuals on-site if they differ from those listed on the application.

Exercising safety precautions during the inspection is critical and the appropriate safety equipment is the

responsibility of the inspector; hardhats, earplugs and eye protection are commonly required in light commercial, industrial, or manufacturing settings.

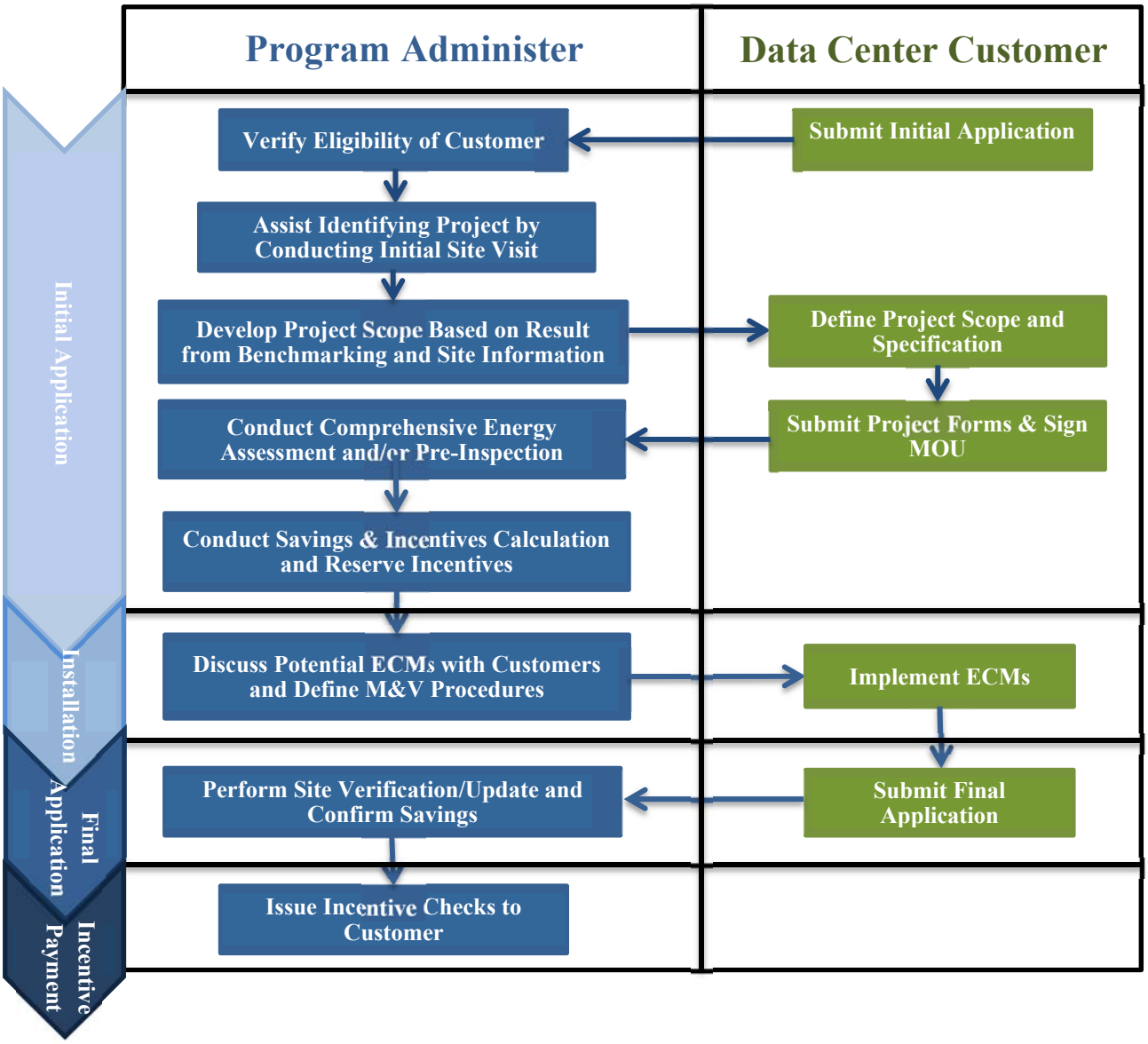
Inspectors are asked not to discuss the results immediately after the walk-through or give any indication that the requested incentive will definitely be granted. The inspector will inform the facility that they will be preparing an inspection report and the results of this report will be factored into the calculations of the reservation amount (in the case of a pre-inspection) or the incentive amount (in the case of a final inspection). If the results are materially different from the amounts requested by the Program Participant on the Initial Application or final application, the Program Participant will be contacted prior to the issuance of a reservation letter or incentive check.

2.3.4 Inspection Report

A data center inspection report form is used, allowing for consistency in evaluations and prompt turn-around of report completion. The current target time frame to turn in inspection reports is five (5) business days after the site visit, assuming all information required for the report is obtained on or before the inspection.

The inspection report form includes project identification, description, and inspection findings, as well as any project discrepancies or unique details. Photographic documentation is not required, but will supplement the inspection report if permission is granted by the facility.

2.4 Program Flow Diagrams



2.5 Other Information

2.5.1 Confidentiality

DCEEP is subject to oversight by the Public Utility Commission of Texas (PUCT), which may request a copy of any program materials received by Willdan Energy Solutions or CenterPoint Energy. A Program Participant's sensitive company and project information submitted to DCEEP, such as financial statements and project costs, will be treated confidentially to the fullest extent possible and will not be provided directly to outside parties other than the PUCT and their authorized representatives. Neither Willdan Energy Solutions nor CenterPoint Energy will be liable to any Program Participant or other party as a result of public disclosure of any submittals.

2.5.2 Submission of False Information

Program Administer will discontinue its evaluation of all submittals from any Program Participant who submits false, misleading or incorrect information. If an evaluation is discontinued under these circumstances, all of the Program Participant's submittals will be returned.

2.5.3 Internet Sites

The CenterPoint Efficiency Web site at https://centerpoint.anbetrack.com and http://www.centerpointefficiency.com will serve as the primary source for all updated program information and materials. The Web site will include:

- Information that describes the program process and requirement
- Downloadable program materials
- Contact information

2.5.4 Disclaimers

Program Participant acknowledges and agrees that any review or inspection by Program Administer of Program Participant's facilities/premises or of the design, construction, installation, operation or maintenance of the energy efficiency equipment installed or to be installed in connection with the program is solely for the information of CenterPoint Energy. In performing any such inspection or review or in accepting the installed equipment for the award of incentives, Program Participant acknowledges and agrees that Program Administer makes no guarantee, representation or warranty whatsoever as to the economic or technical feasibility, capability, safety or reliability of the equipment, its installation by a project contractor or its compatibility with Program Participant's faculties.

Program Rule Changes

CenterPoint Energy reserves the right to modify program features, program participation process, incentive structure and project and measure eligibility requirements throughout the program year.

Program Implementer is an Independent Contractor

Willdan Energy Solutions is an independent contractor and is not authorized to incur obligations on behalf of CenterPoint Energy. CenterPoint Energy is not responsible for the truth or validity of any representation not contained in the program manual or Memorandum of Understanding.

3 Project Review and Measurement & Verification

3.1 Overview

Upon receipt of the project application, a technical review of project energy savings will be required for all projects. Review will involve a site visit for data gathering, and calculations and analysis to confirm energy savings estimates. Review will be performed by Program Administer at two distinct stages in the application process: before project installation and after project installation.

Project review will require the confirmation of energy savings by comparing the energy consumption of the post-install data center environment with that of a baseline, pre-install data center environment. Review of both environments will involve:

- Verification of quantity of installed and operating equipment,
- Verification of makes and models of all involved equipment,
- Gathering and analysis of energy use data points, which may include: equipment input/output voltage, amperage and kW load, operating efficiencies, set point temperatures, actual temperatures, motor horsepower, motor speeds, and operating hours.

Program Administer will refer to the current statewide Technical Reference Manual (TRM)[1] wherever is possible to evaluate the energy and peak demand savings. The purpose of the statewide Technical Reference Manual is to provide a single common reference document for estimating energy and peak demand savings resulting from the installation of energy efficiency measures promoted by utility-administered programs in Texas.

While this version of the TRM is specific to measures using a deemed savings approach, this Data Center Energy Efficiency Market Transformation Program provides Program Participants with more flexibility in the types of projects they can bring to the program. Data center projects can include measures for which no deemed savings can be developed, or for measures that are applied to complex energy-using systems. Because these projects are often very site-specific, Program Administer will work with the Program Participant to evaluate the energy and peak demand savings.

3.2 Energy Efficiency Standard

Establishing clearly defined energy efficiency baselines for data centers is crucial not only from a program administration standpoint, but also to appropriately assess energy savings and attribution. As of yet, there are no energy efficiency standards for data centers and distributed IT infrastructure that have achieved widespread adoption.

[1] Available at http://texasefficiency.com/index.php/regulatory-filings/deemed-savings

For equipment or project where deemed savings approach (refer to Section 3.5.2) can be referenced in the TRM, the baseline and efficiency standard requirement will be based on Texas TRM.

For equipment or project where no deemed savings approach can be referenced in the TRM or M&V is required, the pre-existing data center environment may be analyzed as the baseline to calculate and establish pre-install energy consumption, and California's *Energy Efficiency Baselines for Data Centers: Statewide Customized New Construction and Customized Retrofit Incentive Programs*[2] will be used as the guidelines for estimate post-install energy consumption. Below are general descriptions of the typical cooling and power delivery and conditioning systems used as the energy efficiency standards in the data centers.

Table 4: Post-Install Energy Standard for Data Center with ≤1 MW Total Design IT Load

Measure Type	Post-Install Condition
Cooling System	• Uniformly-sized air-cooled DX CRACs • No air-side or water-side economization • Constant-speed fans • N+1 redundancy • Safety factor on capacity equal to design load plus 20%. • Air-cooled condensers • Number of CRAC needed to meeting the airflow and cooling requirements • No airflow isolation measures
Power Delivery and Conditioning	• Double-conversion uninterruptible power supply • Standard efficiency distribution transformers • Standard efficiency power distribution units • AC power distribution

Table 5: Post-Install Energy Standard for Data Center with >1 MW Total Design IT Load

Measure Type	Post-Install Condition
Cooling System	• Water-cooled chilled water plant serving uniformly-sized chilled water CRAHs • No air-side or water-side economization • Constant-speed fans • N+1 redundancy on chillers, cooling towers, and pumps • Safety factor on capacity equal to design load plus 20%. • Idle chillers are staged on after operating chillers exceed 80% load factor • Cooling load is shared equally among all active chillers • Electric chillers • Number of CRAH needed to meeting the airflow and cooling requirements • No airflow isolation measures
Power Delivery and Conditioning	• Double-conversion uninterruptible power supply • Standard efficiency distribution transformers • Standard efficiency power distribution units • AC power distribution

The equipment load characteristics and operating hours of the existing baseline equipment must be obtained

[2] Available at http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/hightech/data_center_baseline.pdf

and documented through regressions on historical data, direct measurements, or operational logs. Only base load will be considered, capability from redundant equipment will not be counted towards baseline load calculation, and load expansion may be addressed as separate projects. For replacement projects, it may be necessary to adjust the energy use estimate for the existing equipment to account for minimum-standard equipment efficiency. For new construction, the design load characteristics and estimated operating hours should be used to create a theoretical baseline energy usage.

The load dependences that vary significantly over time should be accounted for so that the annual baseline consumption is "typical":

- For weather, bin data should be used to project baseline usage.
- Typical IT utilization rates should be obtained to estimate IT loads through a typical one-year period.
- Seasonal values should be applied for those sectors that have significant seasonal variation that could impact the baseline consumption.

3.3 Project Costs and Tests

Estimates and invoices representing total project and/or incremental cost data will be required from the Program Participant during pre- and post-install project review, respectively. This information will be analyzed so that:

- Total project cost and incremental cost may be identified;
- Any necessary capping of DCEEP incentives may be identified;
- Cost data may be provided for cost effectiveness testing.

Total project cost may be defined as all labor and materials directly required to achieve the installation of the energy-saving project. (Total project cost may not include planning and design, but may include equipment costs, delivery costs, and install costs.)

Calculation of incremental cost will depend on the following:

- Whether the project is replacing/retrofitting old equipment or accommodating expansion;
- If a replacement or retrofit, whether the existing equipment has reached the end of useful life (EUL).

In the case of equipment replacements and retrofits, Program Administer will be responsible for assessing whether the equipment's operation had reached the end of useful life and functionality. If the replacement or retrofit is deemed not necessary to the continued operation of the equipment, it is considered an early replacement or retrofit and the full project cost will be used as the incremental cost.

For equipment supporting new IT load (i.e., no existing equipment is replaced) or replacing equipment at the end of its useful life, incremental cost may be defined as all labor and materials needed to achieve the installation of the energy-saving project, minus those that could achieve an alternate, non-energy-saving project. In some cases, the full measure cost may be the incremental measure cost (e.g., VFD install or free cooling install).

All costs to be included in incremental and total project cost analysis should be submitted as invoices to Program Administer for inclusion in post-install review.

3.4 Project Review Deliverables

The project review savings analyses conducted by Program Administer will be available for review in the form of two documents:

- An engineering analysis (EA), representing all pre-install conditions, energy savings and estimated costs.
- A post-install report (PIR), representing all post-install conditions, energy savings and confirmed costs.

3.5 Measurement & Verification

Certain projects will require further confirmation of energy savings through measurement and verification (M&V) of equipment data points, and associated analysis. In these cases, a comprehensive monitoring and verification plan will be developed by Program Administer employing the International Performance Measurement and Verification Protocol (IPMVP) (www.ipmvp.org/download.html). Measurement and verification data will be gathered from the Program Participant utilizing a combination of any available building- or equipment-level monitoring systems, and Program Administer provided data collection and logging equipment. If a project requires M&V, Program Administer will alert the applicant during application review. Program Administer will then assist the applicant with the development of an M&V plan that includes how the collected data will be used to calculate the final energy savings and incentive.

3.5.1 Projects Requiring M&V

M&V will be required on a project-by-project basis. When considering whether or not M&V should be required for projects of this size, Program Administer will consider the following: weather-related effects on HVAC efficiencies, interactive measures, and any other needs for trending data.

When M&V is required, M&V data, analysis, and conclusions will be incorporated into the Program Administer post-installation report (PIR).

3.5.2 M&V Approaches

Three M&V approaches are outlined below:

- **Deemed or Stipulated Savings:** The most common approach, deemed savings, which are based on standardized savings values or simple formulas for a range of measures in representative building types. This approach is suitable for a variety of projects where energy and demand savings may be estimated to a reasonable degree of accuracy without additional M&V. Variables such as operating hours, coincident usage with peak electric demand period, and energy consumption of existing equipment are assumed in these cases according to previously gathered field data. The Program Participant is not required to perform any M&V activities when using deemed or stipulated savings. For example, projects that replace DX units or T12 lamps and ballasts with new, higher efficiency alternatives would typically be eligible for deemed savings and would not require further field measurements.

- **Simplified Measurement and Verification (Simple M&V) – IPMVP Option A (Retrofit Isolation: Key Parameter Measurement):** Savings values using this approach are based on engineering calculations using typical equipment characteristics and operating schedules developed for particular applications, with some short-term testing or simple metering. Please contact Program Administer when determining whether to employ the Simplified M&V or Full M&V approach. An M&V plan is required to be submitted before the project begins for this approach.

- **Measured Savings or Full M&V – IPMVP Options B, C, or D:** With this approach, actual measurements and analysis through metering, billing or regression analysis, or energy modeling are relied upon to calculate peak electric demand savings and energy savings. There are specific M&V procedures based on the International Performance Measurement and Verification Protocol (IPMVP) and there are three Full M&V Options:

    a) Option B – Retrofit Isolation: All Parameter Measurement; Applicable to Various Measures
    b) Option C – Whole Facility Metering or Sub-metering; Applicable to Various Measures
    c) Option D – Calibrated Simulation; Applicable to Various Measures

3.5.3 New Construction and Phased M&V

New construction data center projects present a particular program challenge due to the length of a project cycle. A new data center may involve a multi-year planning, engineering, and construction period, and often take several years of operation before reaching full "occupancy". Program Administer may review the construction and build out schedule with new construction applicants to determine an appropriate phasing structure and develop appropriate M&V plan. Note that depending on project specific situation, the baseline may need to be revised.

4 Frequently Asked Questions

1. What is the Data Center Energy Efficiency Program (DCEEP)?

DCEEP is an energy efficiency program designed to assist CenterPoint Energy's data center customers to reduce peak electric demand and annual energy usage by providing access to technical knowledge, energy assessments, and financial incentives to improve the efficiency of their buildings.

2. Who is eligible to participate in DCEEP?

Please see the "Eligibility" section of this Program Manual for exact details.

3. What does DCEEP cost?

The Program Participant PAYS NOTHING for participating in DCEEP. CenterPoint Energy provides all of the support and incentives for DCEEP. THE FINANCIAL INVESTMENT ANY PROGRAM PARTICIPANT MAKES IS FOR THE ENERGY EFFICIENCY MEASURES THAT THEY INSTALL IN THEIR FACILITIES.

4. What incentives are available through DCEEP?

DCEEP offers both cash and non-cash incentives to Program Participants in order to assist with a specific organization's needs. Financial incentives may be available for energy efficiency projects, depending on the budget available at the time of your Project Application Form submission, please refer to Section 1.8.3 for incentive rate and limitation. Other program services, such as technical assistance and communications support, are made available according to the needs of each Program Participant.

5. How does a Program Participant enroll in DCEEP?

An eligible Program Participant may participate in DCEEP by submitting a Program Application. Please see the "Program Enrollment/Contacts" section for additional details.

6. What are the next steps after initial enrollment in DCEEP?

1) Program Administer and the Program Participant work collaboratively to appropriately characterize potential energy efficiency projects, including recommended upgrades and estimated electric demand (kW) and energy savings (kWh).

2) Program Participant selects projects for the current program year and works with Program Administer to prepare project forms detailing the scope and timeline of each individual project.

3) For projects retrofitting or replacing existing equipment, Program Administer will conduct a pre-installation inspection at the project site prior to the Program Participant submitting the Project Application Form. The pre-installation inspection is REQUIRED for ALL retrofit projects. New construction projects do not require a pre-installation inspection.

4) For projects involving new construction, Program Participant must submit a full set of stamped construction drawings (A/M/E/P) (in electronic, PDF file format) to Program Administer for review.

5) Assuming the Program Participant passes any requisite pre-installation inspections or plan reviews, Program Participant then submits a completed/signed project forms and signed Memorandum of Understanding (MOU) to DCEEP via eTrack.

6) Program Administer reviews Project Application Form(s) for accuracy, calculates the estimated reductions in peak electric demand (kW) and energy consumption (kWh), and reserves incentives according to estimated saving.

7) The Program Participant completes the energy efficiency project.

8) The Program Participant notifies Program Administer that the project is completed. Please note that all projects that are to receive a financial incentive from DCEEP must be completed by November 30th in order to allow time for verification of the project.

9) For all projects, Program Administer will conduct a post-installation inspection at the project site.

10) Program Administer finalizes project savings/incentive amounts based on the results of the post-installation inspection.

11) CenterPoint Energy issues incentive checks to Program Participant.

12) Program Administer follows up with the Program Participant regarding future energy efficiency projects.

7. Who decides what energy efficiency technologies to install and who installs them?

The participants decide what energy efficiency measures to implement and how they are implemented. The Program offers only improved access to assistance for identification and evaluation of energy efficiency opportunities. The Program does NOT provide any installation of energy efficiency measures.

8. How are energy efficiency opportunities determined?

Program Administer works with each Program Participant to assess energy efficiency opportunities in both existing facilities and with new construction projects using a combination of appropriate means, which may include a facility walk through, energy performance benchmarking analysis, and staff interviews.

5 Program Key Definitions

The following are definitions to commonly used terms in the CenterPoint Energy Data Center Energy Efficiency Program:

Deemed Savings – a set of pre-determined, validated estimates of energy and peak demand savings attributable to energy efficiency measures in particular types of application that an electric utility may use instead of energy and peak demand savings determined through measurement and verification activities.

Demand Savings (kW) – Peak demand savings that have been approved using one of the eligible measurement and verification protocols as set forth in this Program Manual. It represents the average reduction in demand on the utility system throughout the utility system's peak period calculated by determining the average hourly impact over the 516 hours contained in the peak period.

Energy Savings (kWh/yr) – Electric energy savings over the course of one 12-month period

Estimated Incentive Payment – Contained in the Project Application Form (once approved by the Program Administer), this is the amount of incentives reserved in DCEEP budget for the list of committed projects, and therefore is the maximum amount of incentives the Program Participant can receive upon project completion and verification of savings.

Incentive Reservation – In order to receive financial incentives through this Program, Program Participant must first reserve incentives by submitting (and having approved) a Project Application Form.

Memorandum of Understanding (MOU) – Non-binding agreement signed and submitted by Program Participant, stating their intent to participate in DCEEP

Customer – Eligible CenterPoint Energy electric distribution customer who has enrolled in DCEEP

Peak demand – Electrical demand at the times of highest annual demand on the utility's system

Peak period – The summer peak period is defined (no changes) as weekdays, between the hours of 1 P.M. and 7 P.M. from June 1 until September 30, excluding holidays. The winter peak period is defined as between the hours of 6 A.M. and 10 A.M. and 6 P.M to 10 P.M., during the months of December, January, and February, excluding weekends and Federal holidays.

Post-Installation Inspection – Inspection performed after installation of new equipment. Post installation inspection verifies actual installed measure(s) to verify resulting deemed or measured and verified demand and energy savings.

Pre-Installation Inspection – Inspection performed prior to any replacement of existing equipment, device, or structural energy efficiency measures (windows, window film, roof coatings, etc.) to validate and collect data on existing equipment and measures.

Project – For Program purposes, a project is defined as one (1) proposed peak demand savings measure type

at one (1) facility owned and/or operated by the Program Participant.

Project Application Form – In order to reserve financial incentives through DCEEP, Program Participant must complete and sign this document, which details the location, scope, and start/completion dates for each project that is being submitted.