$PROJECT\_NAME$
$PROJECT\_LOCATION$

Xcel Energy’s Energy Design Assistance Program

$REPORT\_TYPE$

$DATE$

**Prepared for:**

$CLIENT\_NAME$

$CLIENT\_BUSINESS\_NAME$

$CLIENT\_ADDRESS$

$CLIENT\_PHONE$

$CLIENT\_EMAIL$

**Prepared by:**



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Energy Design Assistance Program Process & Timeline

Xcel Energy’s Energy Design Assistance (EDA) process is designed to assist the Owner and Design Team in making decisions concerning energy-efficiency measures for the project. The main steps are:

|  |  |  |
| --- | --- | --- |
| **Construction stage****(ESTIMATE)** | ENERGY DESIGN ASSISTANCE STATE | **DATE** |
| **aPPLICaTIon****Design phase** | Step 1: APPLICATIONComplete applicationXcel Energy accept/reject of application | **$APPROVAL\_DATE$** |
| **PRE/EARLY SCHEMATIC DESIGN PHASE** | Step 2: INTRODUCTIONIntroductory meeting* EDA Program overview
* Energy efficiency measure discussion

Begin collection of building and incremental cost dataEnergy Consultant (EC) submits introductory report | **$INTRO\_DATE$** |
| **Schematic Design phase** | Step 3: PRELIMINARY ENERGY ANALYSIS (PEA)Early massing, HVAC, daylighting (Enhanced Track only)Preliminary energy analysis meeting* Review of analysis results in PEA report
* Selection of measures to be included in final energy analysis

EC submits PEA report | **$ PEA\_DATE $** |
| SD completion |  |
| **Design Development phase** | Step 4: FINAL ENERGY ANALYSIS (FEA)Final energy analysis meeting* Review of updated whole building analysis in FEA report
* Review of program incentives
* Introduction to verification process

Customer selects an energy design alternative, showing an intent to move forward with selected measuresEC submits FEA report | **$BUNDLE\_DATE$** |
| DD completion |  |
| **Construction Document phase** | Step 5: CONSTRUCTION DOCUMENT (CD)Customer sends final design CDs to Measurement & Verification Company (MVC)**Measurement & Verification Company:*** Confirms measures included in final design documents.
* Sends to EC to update model

 **Energy Consultant:*** Submits CD report with updated model results and incentive
* EC complete green certification docs (Enhanced Track only)

Design team completes documentation for fee reimbursement | **$CD\_DATE$** |
| **CD Completion** |  |
| **Construction** | **Construction Occurs. Estimated construction completion date** |  |
| **Construction ends** |  |
| **Post-Occupancy** | MVC conducts on-site measurement and verification. Sends M&V results to EC to update modelEC submits M&V report with updated model results and incentiveEDA project complete. | **$MV\_DATE$** |
| **Incentive payment to customer is received approximately two months post-verification** |

Xcel Energy, through the EDA program, has qualified energy consultants to provide our customers with a service that includes an integrated design process. This integration includes using an energy model to compare building energy scenarios and estimate energy savings. The energy model itself is an instrument to project results and review different energy efficiency opportunities. The results of these models belong to Xcel Energy and their customers as participants through the EDA program.

Xcel Energy customers participating in the EDA program may distribute the results of their model to anyone they choose.  Xcel Energy will not release this information unless written permission from the customer has been obtained.  Xcel Energy also cautions the use of these reports; data is based on an analysis done for a specific time frame.  Buildings naturally adjust as occupancy reaches its full potential, causing variations from pre-construction data.

Project Summary

|  |  |
| --- | --- |
| **Project Name** | **$PIF\_PROJECT\_NAME$** |
| Xcel Energy Project # | $XPF\_XCEL\_PROJECT\_NUMBER$ |
| Location | $PROJECT\_LOCATION$ |
| Building Type | $PIF\_BUILDING\_TYPE$ |
| Conditioned Floor Area | $PIF\_FLOOR\_AREA\_CONDITIONED$ |
| Unconditioned Floor Area | $PIF\_FLOOR\_AREA\_UNCON$ |
| Above-Grade Stories | $PIF\_STORIES\_ABOVE\_GRADE$ |
| Below-Grade Stories | $PIF\_STORIES\_BELOW\_GRADE$ |
| Electricity Provided by Xcel | $APP\_BOOLEAN\_ELECTRICITY$ |
| Natural Gas Provided by Xcel | $APP\_BOOLEAN\_GAS$ |
| District Heating Gas Provided by Xcel | $APP\_BOOLEAN\_DH$ |
| District Cooling Electricity Provided by Xcel | $APP\_BOOLEAN\_DC$ |
| EDA Baseline | $RULE\_BASELINE$ |
| Track (Basic, Express or Enhanced) | $PIF\_TRACK$ |
| Certification (Enhanced Only) | $APP\_CERTIFICATION\_GOAL$  |
| Early Analysis (Enhanced Only) | $PIF\_EARLY\_ANALYSIS$ |
| Estimated Savings (vs. baseline) |  |
|  Demand (kW) | $ESTIMATED\_KW$ |
|  Energy (kWh) | $ESTIMATED\_KWH$ |
|  Gas (Dth) | $ESTIMATED\_DTH$ |
| Estimated Construction Completion Date | $PIF\_COMPLETION\_DATE\_ESTIMATE$ |
| Estimated 80% Occupancy Date | $PIF\_OCCUPANCY\_DATE\_ESTIMATE$ |
| Estimated Verification Date | $PIF\_VERIFICATION\_DATE\_ESTIMATE$ |

|  |
| --- |
| **Customer incentive calculations are based on the following dollar amounts** |
|  Demand ($/kW) | $ $RULE\_ELEC\_DEMAND\_INCENTIVE$ |
|  Energy ($/kWh) | $ $RULE\_ELEC\_ENERGY\_INCENTIVE$ |
|  Gas ($/Dth) | $ $RULE\_GAS\_ENERGY\_INCENTIVE$ |

Project Participants

Project participants include:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Company | Role | E-Mail | Phone | In Attendance |
| $CONTACT\_NAME$ | $CONTACT\_COMPANY$ | $CONTACT\_ROLE$ | $CONTACT\_EMAIL$ | $CONTACT\_PHONE$ |  |

Baseline Models

**EDA Baseline** – This building energy analysis uses a baseline model as a benchmark to compare energy performance for energy efficiency measures. Models follow the Xcel Energy EDA protocol, which is based on an ASHRAE 90.1-compliant baseline building energy model developed following Appendix G energy modeling requirements, with modifications for Xcel Energy’s utility purposes.

This Base model will match the space heating energy source of the proposed building: either electricity or fuel. If the design team is considering scenarios with all electric heating as well as scenarios with natural gas or hybrid heating, two different EDA Base models will be required to calculate energy and cost savings for the different proposed buildings. The baseline model calculates kWh electricity, kW electric demand, and dekatherm (10 therms) natural gas usage. This is the baseline to calculate savings for incentives from Xcel Energy.

**Certification Baseline** – When a 3rd party-verified certification is being pursued (such as LEED) under the EDA enhanced track, a separate baseline and modeling will be conducted using the certification requirements.

**Proposed/Cost Baseline** – The Cost Base model is developed to be used by the Design Team and Owner to calculate energy cost savings and payback periods for various energy efficiency strategies. Energy consultants guide teams through the process of using the economics of energy efficiency to make design decisions.

Changes to the Model from Preliminary Energy Analysis Report

The following changes were made to the model since the PEA report:

* Description of change to the EDA Baseline Model/measures and reason for change

# Design Alternatives

For this project, the following design alternatives were considered. Each design alternative is made up of several measures, as shown below. For results of individual Measure, see Section 4.

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# Design Alternative Results - Overview

$CHART\_COST$

Figure 2‑1 Annual Utility Costs by Fuel Type ($/year)

$CHART\_ANNUAL\_ENERGY\_COSTS\_BY\_END\_USE$

Figure 2‑2 Annual Utility Costs by End Use ($/year)

$CHART\_EUI$

Figure 2‑3 Whole-Building EUI (kBtu/ft2-year)

# Design Alternative Results - Details and Incentives

Table 3‑1 Summary of Financial Impact vs. Proposed Baseline

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Alternative | EnergyCost ($) | Energy CostSavings($)1 | Total % Energy Cost Savings(%)2 | Incremental CapitalCost ($)3 | Estimated Incentive ($)4 | Simple Payback(years)5 |
| $S\_CB\_ID$ | $S\_CB\_NAME$ | $$S\_CB\_COST$ | $$S\_CB\_SVG$ | $S\_CB\_SVGP$ | $$S\_CB\_ICC$ | $$S\_CB\_INCENT$ | $S\_CB\_SP$ |

1. Energy Cost Savings = Energy CostProposed Baseline – Energy CostAlternative
2. Total % Energy Cost Savings = (Energy CostEDA Baseline – Energy CostAlternative)/Energy CostEDA Baseline
3. Incremental Capital Cost = Capital CostAlternative – Capital CostProposed Baseline
4. Incentive calculated using un-rounded energy modeling results.  Because of rounding error, hand-calculation may be off by up to $1.
5. Simple Payback = ((Capital CostAlternative – Capital CostProposed Baseline )-(IncentiveAlternative –IncentiveProposed Baseline))/(Energy CostProposed Baseline – Energy CostAlternative)

Table 3‑2 Summary of Savings vs. EDA Baseline

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Alternative | PeakDemand (kW) | Electric Consumption (kWh) | Natural Gas Consumption (Dth) | Peak Demand Savings (kW)1 | Electric Consumption Savings(kWh)1 | Natural Gas Savings (Dth)1 |
| $S\_EB\_ID$ | $S\_EB\_NAME$ | $S\_EB\_PD$ | $S\_EB\_EC$ | $S\_EB\_GC$ | $S\_EB\_PDS$ | $S\_EB\_ECS$ | $S\_EB\_GCS$ |

1. Savings relative to EDA Baseline

Table 3‑3 LEED Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Alternative | EnergyCost ($) | LEED EnergyCost Savings ($)1 | LEED Energy Cost Savings (%)1 | LEED Points2  |
| $S\_LB\_ID$ | $S\_LB\_NAME$ | $$S\_LB\_COST$ | $$S\_LB\_SVG$ | $S\_LB\_SVGP$ | $S\_LB\_LP$ |

1. Savings relative to LEED Baseline
2. Based on LEED Version $LEED\_VERSION$

$CHART\_FT\_DEMAND\_ELECTRICITY$

Figure 3‑1 Peak Electric Demand (kW)

$CHART\_FT\_CONSUMPTION\_ELECTRICITY$

Figure 3‑2 Electric Consumption (kWh)

$CHART\_FT\_CONSUMPTION\_GAS$

Figure 3‑3 Gas Consumption (Dth)

# Results by Individual Measure

Table 4‑1 Results by Individual Measure - Annual Savings vs. Proposed Baseline

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Measure | EnergyCost ($) | Energy CostSavings($)1 | Total % Energy Cost Savings(%)2 | Incremental CapitalCost ($)3 | Simple Payback(years)4 |
| $M\_ID$ | $M\_NAME$ | $$M\_COST$ | $$M\_SVG$ | $M\_SVGP$ | $$M\_ICC$ | $M\_SP$ |

# Early Analysis

Describe the types of early analysis performed, the outcome of discussing these results with the design team and customer, and the modeling results as compared to an EDA baseline.

1. Modeling Inputs and Assumptions

Show summary info about models. Format is up to the Energy Consultant. Generally good practice to point out differences between the EDA Baseline, Proposed Baseline, and LEED Baseline.

* 1. Location and Climate Data

Summary Info

* 1. Utility Rates

Summary Info

* 1. Building Envelope Model Inputs

Summary Info

* 1. Lighting and Internal Load Inputs

Summary Info

* 1. HVAC & DHW Inputs

Summary Info

1. Modeling Results Summary
	1. B.1 Master Results Table – Design Alternatives and Individual Measures

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Measure | EnergyCost ($) | ElectricityCost($) | GasCost($) | DistrictHeatingCost($) | DistrictCoolingCost($) | OtherEnergyCost($) | ProposedBaselineEnergy Cost Savings($)1 | EDABaselineEnergy Cost Savings($)2 | LEED BaselineEnergy CostSavings($)3 | LEED Points4 | PeakDemand (kW) | Electric Consumption (kWh) | Natural Gas Consumption (Dth) | Peak Demand Savings(kW)5 | ElectricConsumption Savings(kWh)5 | Natural Gas Savings (Dth)5 | EUIReduction(kBtu/ft2-yr)5 | IncrementalCapitalCost ($)6 | Simple Payback(years)7 |
| $MR\_ID$ | $MR\_NAME$ | $$MR\_COST$ | $$MR\_ELEC\_COST$ | $$MR\_GAS\_COST$ | $$MR\_DH\_COST$ | $$MR\_DC\_COST$ | $$MR\_O\_COST$ | $$MR\_CB\_SVG$ | $$MR\_EB\_SVG$ | $$MR\_LB\_SVG$ | $MR\_LP$ | $MR\_PD$ | $MR\_EC$ | $MR\_GC$ | $MR\_PDS$ | $MR\_ECS$ | $MR\_GCS$ | $MR\_EUI\_R$ | $$MR\_ICC$ | $MR\_SP$ |

1. Proposed Baseline Energy Cost Savings = Energy CostProposed Baseline – Energy CostMeasure
2. EDA Energy Cost Savings = Energy CostEDA Baseline – Energy CostMeasure
3. LEED Energy Cost Savings = Energy CostLEED Baseline – Energy CostMeasure
4. Based on LEED Version XYZ
5. Energy, Demand, and EUI Savings relative to EDA Baseline
6. Incremental Capital Cost = Capital CostMeasure – Capital CostProposed Baseline
7. Simple Payback = (Capital CostMeasure – Capital CostProposed Baseline)/(Energy CostProposed Baseline – Energy CostMeasure)