

**STATE OF IOWA  
BEFORE THE IOWA UTILITIES BOARD**

<b>IN RE:</b>	
<b>INTERSTATE POWER AND LIGHT COMPANY</b>	<b>DOCKET NO. EEP-2012-0001</b>

**ADDITIONAL INFORMATION AND ERRATA**

**COMES NOW**, Interstate Power and Light Company (IPL), and provides its additional information to the Order Docketing Plan, Setting Intervention Deadline, Establishing Procedural Schedule, and Requiring Additional Information issued on December 26, 2012, (December 26<sup>th</sup> Order) by the Iowa Utilities Board (Board). In the December 26<sup>th</sup> Order, the Board directed IPL file additional information identified in Appendix A to the December 26<sup>th</sup> Order (Board Appendix A). Additionally, for the purposes of errata, IPL submits corrections with this filing to certain numerical input errors, as well as a few additional minor errors, discovered in the November 30, 2012, filing. The errata information is addressed at the end of this pleading, after the provision of answers to Board Appendix A.

**ADDITIONAL INFORMATION**

Below, IPL provides its additional information to the Board's Appendix A. Changes, where appropriated, have been highlighted in yellow in the revised 2014-2018 Energy Efficiency Plan (Plan). When the entire section, chapter, or spreadsheet has been revised, IPL has only highlighted the title. The responses

below, to the extent practical, specifically note the location of the revision made pursuant to Board Appendix A.

### **Volume I, Application Chapters 1-6**

1. **IPL’s “Application” combines narrative description of the plan development with descriptions of the proposed programs, including program-specific details and program data.**
  - a) **IPL shall reformat its “Application Chapters 1-6” document in order to separate the Plan Development description and numbers, located in Chapters 1 and 2, from the proposed “program-specific” information in Chapters 3 through 6. The Plan Development narrative, tables and figures should contain the Executive Summary (Chapter 1) and the Overview of the Plan (Chapter 2) which should include any general, nonprogram-specific information filed in the Application. An additional chapter (Chapter 3) shall be added to the Plan Development document to summarize the information requested under Items 4 and 5 below.**
  - b) **The program-specific information for the proposed programs shall be filed in a single, separate document, labeled “Program Descriptions and Data,” with each program numbered sequentially from 1 through the number assigned to the last program in the list (such as the “Next Plan” program). The information to be filed in Program Descriptions and Data must include all program-specific information in Chapters 3 through 6 of the “Application,” plus additional information provided by or derived from information specified in Items 8 and 9 below.**
  - c) **Excel workbooks containing the data required in items 8 and 9 shall be filed as an additional appendix, with file name(s) and document titles consistent with the Program Descriptions and Data document. Any tables provided in the reformatted Plan Development document or in the document containing Program Descriptions and Data must refer to matching tables in the additional appendix or appendices which are supported by Excel worksheet calculations.**

### **Response:**

IPL has restructured its 2014-2018 Energy Efficiency Plan (Plan) application, Volume I in accordance with Item No. 1 in Board Appendix A. The

Plan application now consists of two separate documents, as required by Board Appendix A, Item Nos. 1.a and 1.b:

- a) Volume I Book 1 contains three chapters:
  - 1) Executive Summary;
  - 2) Plan overview (which includes any general, non-program specific information filed in the Application); and
  - 3) Plan Development (a new chapter, which summarizes the information requested in Board Appendix A, Item Nos. 4 and 5).

b) Volume I Book 2 is a single, separate document labeled “Program Descriptions and Data,” and contains an introduction describing each portfolio in IPL’s Plan, plus 28 sections containing program descriptions and data. Each section describes one IPL program and is numbered sequentially with the section numbers matched to the corresponding program number. This section also contains additional information provided by or derived from information required by Board Appendix A, Item Nos. 8 and 9.

c) Additionally, (Appendix A, Item 1.c.) all tables containing data required by Board Appendix A, Item Nos. 8 and 9 include references to the corresponding source data provided in the appendices to the Plan.

**2. IPL shall use labeling for program tables and figures similar to the method (x.x.x) used in Chapters 3 through 6, but numbered consistent with the program numbers required by Item 1(b). Consistent numerical labeling for program tables and charts is intended to permit readers and analysts to more readily trace inputs to tables and outputs of program worksheet calculations.**

**Response:**

In the restructured Volume I Book 2 provided, IPL has re-labeled each table such that the first number in each table heading (X.X) refers to the corresponding chapter and program number. The second number in each table heading (X.X) is assigned sequentially, such that the first table in Chapter 1 is labeled Table 1.1 and so forth. Additionally, IPL has added the program name to each table heading to provide greater clarity.

- 3. IPL shall provide an index listing the tables and figures contained in the reformatted Plan Development and Program Descriptions and Data sections of the plan.**

**Response:**

IPL has provided an index of tables and figures following its table of contents in each document of Volume I, Books 1 and 2.

- 4. IPL shall provide in Chapter 3 of the Plan Development section of the plan, a description of the relationship of all programs it currently operates to its proposed continuing, new or discontinued programs. In particular, program measures, incentives and promotional efforts shall be identified for both current and new/altered/discontinued programs. A table mapping or showing the relationship of current programs and features to proposed new programs shall be included in this chapter.**

**Response:**

Table 3.1 in Volume I, Book 1, Chapter 3, provides the following information:

- a comparison of each program in IPL's 2009-2013 EEP to the corresponding program in the 2014-2018 Plan;
- whether the program is new, discontinued, continuing with no significant design changes, or modified; and

- a brief summary of modifications, including changes to program measures, incentives, and promotional efforts.
- 5. IPL shall provide, in Chapter 3 of the Plan Development document, the rationale (both quantitative and qualitative) for its proposal that certain programs currently offered should be eliminated, specifically the Performance Contracting program and the small renewable energy programs. The discussion of programs proposed for elimination should include historic information and data similar to the prospective data for the proposed programs, but specifically must include:**
- a) Program performance data for each program proposed for elimination, addressing the period 2009 through the most recent available calendar year.**
  - b) A benefit-cost analysis for each year from 2009 through the most recent available calendar year in the current plan.**
  - c) An estimate of potential future results, including the costs and benefits, if the program were to continue unchanged for the time period 2014-2018.**

**Response:**

a), b), and c) Chapter 3, Plan Development, a new chapter in Volume I Book 2 of the Plan, includes the following revisions:

- Rationale for Eliminating Programs, which describes IPL's considerations leading to the elimination of its Performance Contracting Program, Residential Renewable Rebates pilot, and Nonresidential Renewable Rebates pilot (Board Appendix A, Item No. 5).
- Program Performance, which provides historical performance data for the Performance Contracting Program, Residential Renewable Rebates pilot, and Nonresidential Renewable Rebates pilot (Board Appendix A, Item No. 5.a). Performance data includes planned and actual kWh and therm

savings and societal cost-effectiveness results (Board Appendix A, Item No. 5.b) for 2009 through the calendar year with the most recent available data.

- Estimate of Future Performance, which contains a narrative describing anticipated future performance of the eliminated programs based on anticipated future market conditions to the best of IPL's knowledge (Board Appendix A, Item No. 5.c).

**6. IPL shall file additional tables titled "Estimated Plan Potential and Goals" in the reformatted Plan Development section of the plan. An identical table shall be filed as an addendum to the Assessment of Energy and Capacity Savings Potential (Assessment of Potential) in Iowa, prepared by Cadmus Group, Inc. The tables in the Plan Development document and in the addendum to the Assessment of Potential must show projected results for each of the five years in the proposed plan, separately for electric energy efficiency, electric demand response and natural gas energy efficiency. The tables must show for each year and for each major quantity (electric MWh and peak MW, natural gas therms and peak day therms) the Technical, Economic, and Market Potential, and the IPL goals. The tables must also show, for electric MWh, peak MW and gas therms, the Technical, Economic and Market Potential and IPL goals as percentages of projected base case sales.**

**Response:**

Tables containing the estimated energy efficiency potentials, electric demand response, and natural gas efficiency, as well as IPL's plan goals, are provided in Volume I Book 1. Identical tables are provided in the appendices to the Plan. The table below identifies each table provided in compliance with Board Appendix A, Item No. 6 and its respective location in the Plan.

Volume I Book 1 Location			Identical Table Provided as Addendum 2 to Appendix H
Table number	Table Name	Section	
2.6	Estimated Electric Efficiency Potential and Plan Goals	2.2.5	Appendix G - Revised Assessment of Electric Economic Energy Efficiency Potential with Updated Avoided Costs and supporting materials. See also Appendix M.
2.7	Estimated Natural Gas Efficiency Potential and Plan Goals	2.2.5	
2.8	Estimated Demand Response Market Potential in 2023 (MW) and Plan Goals	2.2.6	

**7. IPL shall provide measure-level data in an Excel workbook, filed as Revised Appendix I to the Plan. The Excel workbook shall provide data for each measure addressed in the Assessment of Potential by including and extending the data from the November 30, 2012 filing; the requested data should be provided (if possible) on the same line, so that one line represents one measure. The data shall be presented as follows:**

**a) Revise IPL Appendix I, Cadmus Appendix A Tables (A.3.1 through A.3.6) to include for each measure in each table, information on measure-level attributes and cost-effectiveness including: (The format for this Appendix should be similar to the Excel workbook filed on June 12, 2008, as additional information in EEP-08-1 under the file names of: Item 1.1 Database for Assessment – Equipment and Item 1.1 Database for Assessment – NonEquipment)**

- i. Baseline Consumption in Base Year (kWh or therm)**
- ii. Incremental Cost Over Standard Equipment**
- iii. Incremental Cost Over Previous Efficiency Level**
- iv. Stand-Alone Savings Over Standard Equipment (kWh or therm)**
- v. Stand-Alone Savings Over Previous Efficiency Level (kWh or therm)**
- vi. NPV Benefits (per kWh or therm)**
- vii. Societal Benefits**
- viii. Societal Benefit-Cost Ratio**

**b) IPL shall provide measure-specific data associated with estimated energy efficiency potential, including:**

- i. Total Accounts**
- ii. End Use/Equipment Saturation**
- iii. Fuel Share**

- iv. **Number of Units Available for Upgrade over Planning Horizon**
  - v. **Total Measure Technical Potential (kWh or therm)**
  - vi. **Total Measure Economic Potential (kWh or therm)**
- c) **IPL shall provide a glossary of the variables used as column headings in the current (and presumably in the revised) IPL Appendix I, Cadmus Appendix A Tables (A.3.1 through A.3.6).**

**Response:**

Rather than providing a data-intensive and voluminous revision to Appendix I pursuant to Board Appendix A, Item No. 7, IPL is providing this information as new Confidential Appendix M. Please see the electronic files contained in the attached CD. This CD contains the following five separate workbooks:

- Appendix M-a Database of Measures – Retrofit.xls
- Appendix M-b Database of Measures – Equipment.xls
- Appendix M-c Electric Potential Model\_CONF
- Appendix M-d Potential Model\_CONF
- Appendix M-e Model User Guide\_CONF

Appendices M-a and M-b are MicroSoft Excel files containing measure details for the retrofit and equipment measures.

Appendix M-c and Appendix M-d are fully populated and operational versions of Cadmus's proprietary potential assessment model. Separate models for residential, commercial and industrial sector for electricity and natural gas are included. Please note that to operate these models, the directory structures and file names *must be preserved* so as to maintain the links among the various files contained in each directory. The user guide explains how the models operate.

These models and the supporting documentation contain proprietary software and are being submitted as confidential.

- 8. IPL shall file, as a new appendix to the Plan, an Excel workbook(s) providing data and calculations for projected energy and capacity savings, for every program, for each year of the plan.**
  - a) Summary tables shall be included in the reformatted Program Descriptions and Data (filed initially as Chapters 3 through 6). These data, organized by program, must be sufficiently detailed to support the tables labeled as “Incentive Summary, Participation Assumptions and Incremental Energy and Demand Savings Goals” for each of the programs. IPL shall provide duplicate tables for these program performance data embedded in the worksheets for each program required as part of Item 8 below.**
  - b) The Excel workbook shall contain a worksheet for each program and include rows listing proposed energy efficiency measures and columns defined by the following items:**
    - i. end use**
    - ii. measure name**
    - iii. measure description**
    - iv. base equipment**
    - v. baseline kWh**
    - vi. peak KW**
    - vii. therms**
    - viii. peak day therms**
    - ix. savings as a percent of end use energy**
    - x. savings as a percent of end use capacity**
    - xi. measure life**
    - xii. measure costs**
    - xiii. estimated total incentives to be paid as percentages of incremental customer cost**
    - xiv. estimated participation (in numbers of measures or numbers of projects) projected for each year (2014-2018)**
    - xv. energy savings by year (2014-2018)**
    - xvi. demand savings by year (2014-2018)**
    - xvii. utility cost by year (2014-2018)**
  - c) The Excel workbook shall also contain a worksheet showing summary data to support tables 2.1, 2.32 and 2.33 in the reformatted Plan Development document. Table 2.1 in the Plan Development document must be expanded to show incremental**

savings for each program for each year of the plan, must include footnotes explaining how the “Cumulative” numbers were calculated, and must include footnotes defining the “Total Cost.”

- d) The Excel workbook shall contain a worksheet compiling all individual program budgets or spending data, by program (separately for electric and natural gas program elements) and by budget category, for each year of the plan. The worksheet must also contain tables, based on the data in the worksheet, matching or supporting any budget or spending tables embedded as stand-alone tables in the Plan Development document or the Program Descriptions and Data documents.

**Response:**

a) Rather than providing a data-intensive and voluminous hard copy, IPL is submitting the attached CD containing the information requested. Please see the MicroSoft Excel workbook contained in the CD file titled “Appendix J\_Program Participation Data.xlsx.” Please see the tab titled “READ ME” tab within that file for information on the content of this workbook.

b) IPL’s Plan programs/measures have a tab corresponding with the appropriate program/measure name detailing measure specific data.

c) The worksheet titled “SUMMARY” provides the requested data.

d) The worksheet titled “BUDGET SUMMARY” details program level budget by budget category and fuel type.

- 9. IPL shall provide, for each of the programs in the Program Descriptions and Data section of the plan, detailed benefit-cost data and calculations with inputs and outputs that match the tables and data for each of the programs filed initially in the November 30, 2012 filing in this plan. As a model, IPL should consider the Excel worksheets filed as “Item 3 Addenda to Appendix K” in its June 12, 2008, filing of “Additional Information” for Docket No. EEP-08-1. However, IPL shall simplify this type of benefit-cost calculation to reduce the number of worksheets and links.

- a) IPL shall file a Common Assumptions Excel workbook containing worksheets that will provide supporting data for cost-effectiveness calculations. The file shall include the following worksheets:
- i. A worksheet labeled “Basic Data,” shall include a table showing various constants, a table showing periods of hours used, and a table of Demand Charges. The constants, hours, demand charge rate names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - ii. A worksheet labeled “Rates\_EndUses” and including a table of retail rates weighted by each load shape. IPL must adjust the usage classes, end-use segments, load shape names and other data to match data used by IPL to compute benefit-cost results in this proceeding.
  - iii. A worksheet labeled “Electric\_AC\_EndUses” showing Average Annual Electric Avoided Costs by Load Shape. End-use segments, load shape names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - iv. A worksheet labeled “Gas\_AC\_EndUses showing Average Annual Gas Avoided Costs by Load Shape. End-use segments, load shape names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - v. A worksheet labeled “Avoided\_CapacityCosts” and showing capacity segments and data that is updated match categories and data used by IPL to compute benefit-cost results in this proceeding.
  - vi. A worksheet labeled “Peaks” and showing Percentage of Total Use occurring in each time frame. The peak periods, load shape names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - vii. A worksheet labeled “Electric\_AvoidedCosts” showing for all years of analysis (2014 through 2045), and for all 8760 hours of each year, the hourly electric energy avoided costs, with appropriate units listed in the table heading (in Docket No. EEP-08-1, the units are labeled as dollars, which are apparently dollars per hourly megawatt-hour.) The table in EEP-08-1 shows the hour numbers repeating the sequence of 1 – 24. IPL shall start the hour numbering at 1 and continue on to 8760.

- viii. A worksheet labeled “Gas\_AvoidedCosts” showing for all years of analysis (2014 through 2045), and for all 8760 hours of each year, hourly avoided costs, with appropriate units stated in the table heading (in Docket No. EEP-08-1, the units are apparently dollars per hourly therm). The table in EEP-08-1 shows the hour numbers repeating the sequence of 1 – 24. IPL shall start the hour numbering at 1 and continue on to 8760.
  - ix. A worksheet labeled “LoadShape\_Names” and showing the load shape identification numbers, names and fuel types for load shapes used in the IPL analysis. Load shape names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - x. A worksheet labeled “Load Shapes” and showing for each hour of 2014, the hourly load shape for each load shape from worksheet “LoadShape\_Names.” Load shape names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - xi. A worksheet labeled “Rates” which includes rate ID, rate names, territory, and fuel type that has been adjusted to match data used by IPL to compute benefit-cost results in this proceeding.
  - xii. A worksheet labeled “rate Instances,” showing hourly rates by rateID from worksheet “rates.” Rate names and other data must be adjusted to match data used by IPL to compute benefit-cost results in this proceeding
- b) IPL shall file a Program Benefit-Cost Excel workbook containing one worksheet per program, which will provide data, calculations and summary tables for program-level cost-effectiveness. If the amount of data in the workbook reaches a point where electronic transmission becomes difficult, IPL may divide the programs among several work books, with logical groupings such as: electric energy efficiency programs, electric demand response programs, natural gas energy efficiency programs, “Other Funding” and “Outreach, Education and Training” programs.

**Response:**

Rather than providing a data-intensive and voluminous hard copy, IPL is submitting the attached CD containing the information requested in new Confidential Appendix K, “Benefit Cost Calculations.” The models and the

supporting documentation contain proprietary software and confidential information and are being submitted as confidential.

The data, calculations, and results in this file are organized in the following MicroSoft Excel workbooks:

- Appendix K - Common Assumptions\_CONF.xls
- Appendix K - Benefit Cost Model\_Electric\_CONF.xls
- Appendix K - Benefit Cost Model\_Gas\_CONF.xls
- Appendix K - Benefit Cost Model\_Demand Response\_CONF.xls
- Appendix K - Benefit Cost Model\_OET and Other\_CONF.xls

The Common Assumptions workbook (Common Assumptions\_CONF.xls) contains data that are consistent across all programs, such as avoided costs, discount rates, and participant retail rates. Program-specific inputs and outputs can be found in the remaining workbooks, depending on fuel and program type.

The Benefit Cost Model Electric workbook (Benefit Cost Model\_Electric\_CONF.xls) and the Benefit Cost Model Natural Gas workbook (Benefit Cost Model\_Gas\_CONF.xls) begin with an “index” worksheet, which contains active links to the data for each program in the workbook. This index has been created to facilitate navigation in the workbooks. Each program has one tab in these two workbooks with a table of program summary benefit-cost results, followed by annual total energy and capacity savings for the program, measure level calculations of costs and benefits, measure-level input data, program budgets, and finally, a table of basic inputs.

Note that due to active links among these worksheets, the first three workbooks (Common Assumptions\_CONF.xls, Benefit Cost Model\_Electric\_CONF.xls and Benefit Cost Model\_Gas\_CONF.xls) *must be transferred to the same file directory* on the user's hard drive. The Common Assumptions workbook (Common Assumptions\_CONF.xls) *must be open* in order for the Benefit Cost Model Electric (Benefit Cost Model\_Electric\_CONF.xls) and Benefit Cost Model Natural Gas (Benefit Cost Model\_Gas\_CONF.xls) workbooks to produce results.

The Benefit Cost Model Demand Response workbook (Benefit Cost Model\_Demand Response\_CONF) is a stand-alone document that details the benefit cost calculations for the Residential Direct Load Control and Nonresidential Interruptible Programs.

The Benefit Cost Model OET and Other Workbook (Benefit Cost Model\_OET and Other\_CONF) is a stand-alone document that details the benefit calculations for programs that only have utility costs and no direct energy savings (example: Next Plan). These programs are only seen in the "Other Funding Initiatives" portfolio and "Outreach, Education, and Training" portfolio.

Please note the following during review of this information:

- Although the School Based Energy Education Program is part of the Outreach, Education, and Training (OET) portfolio, the benefit cost results are in the Benefit Cost Model Electric (Benefit Cost Model\_Electric\_CONF.xls) and Benefit Cost Model Natural Gas (Benefit

Cost Model\_Gas\_CONF.xls) workbooks, as it is the only program in this portfolio that has energy savings associated with it.

- The Change-a-Light and Appliance Recycling Programs are separated into their respective Residential and Non-Residential benefit costs results page. Please see the green highlighted tabs labeled “TOTAL CHANGE A LIGHT” and “TOTAL APPLIANCE RECYCLING” for the combined results for these two programs. These green tabs list the final benefits and costs reported in the 2014-2018 Energy Efficiency Plan.
- For all programs resulting in both electric and gas savings (e.g. Residential Prescriptive and Home Energy Assessment), participation and savings figures in Benefit Cost Model Electric (Benefit Cost Model\_Electric\_CONF.xls) and Benefit Cost Model Natural Gas (Benefit Cost Model\_Gas\_CONF.xls) are based on weighted averages of electric, gas, and combination participants and savings. The weights are derived from 2011 actuals under the 2009-2013 EEP.
- In the case of measures and programs with both electricity and gas savings, measure and program costs were allocated to each fuel based on their respective BTU equivalent savings.
- The energy savings figures in the model represent avoided generation, derived by adjusting the meter-level savings by avoided line loss. Savings reported in the new Plan report savings at the meter.

**Volume I, Application, Chapter 2**

**10. Table 2.10 “Primary Assumptions Used in the Benefit/Cost Analysis”**

- a) IPL shall provide references or identify supporting data for the numbers in the table. The references shall be to the studies and calculations provided in appendices, or to details provided and supported in the narrative.**
- b) IPL shall provide reference or support for the natural gas retail rates. Staff was unable to trace the rates to the settlement in the recent IPL natural gas docket RPU-2012-0002.**
- c) IPL shall provide references or support for the calculation of the discount rates.**

**Response:**

- a) and b) Please see the following table.**

	Electric	Source	Natural Gas	Source
Retail Rates	Residential 2nd block: \$0.110 per kWh Residential 3rd block: \$0.085 per kWh	See EEP Retail Electric rates spreadsheet, lines 1 and 2	Residential: \$0.188 per therm	Interim Tariff Sheet No. 40
	Small Commercial: \$0.100 per kWh	See EEP Retail Electric rates spreadsheet, line 3	Small Commercial: \$0.180 per therm	Interim Tariff Sheet No. 41
	Large Commercial and Industrial: Summer: \$0.0197 per kWh Winter: \$0.0107 per kWh Plus Demand Charges of: Summer: \$21.07 per kW Winter: \$13.08 per kW	See EEP Retail Electric Spreadsheet, lines 4 and 5	Large Commercial and Industrial: \$0.074 per therm*	Interim Tariff Sheet No. 46
Avoided Energy Costs (2014) (without losses or externalities)	Summer Peak: \$0.053 per kWh	Appendix E – Table E8 (without losses or externalities)	Summer: \$0.445 per therm	Appendix F, Page 10 of 10, Figure F3
	Summer Off-Peak: \$0.039 per kWh	Appendix E – Table E8 (without losses or externalities)		
	Winter Peak: \$0.040 per kWh	Appendix E – Table E8 (without losses or externalities)	Winter: \$0.472 per therm	Appendix F, Page 10 of 10, Figure F3
	Winter Off-Peak: \$0.036 per kWh	Appendix E – Table E8 (without losses or externalities)		
Avoided Capacity Costs (2014) (without losses or externalities)	Generation: \$111 per kW	Appendix E5 – Generation Carrying charge tab	Total: \$8.87 per peak day therm	Appendix F, Page 9 of 10, Figure F2
	Transmission: \$81 per kW	Appendix E5 – Transmission Carrying charge tab		
	Distribution: \$26 per kW	Appendix E5 – Distribution Carrying charge tab		
	Total: \$218 per kW	Addition of Generation, Transmission, and Distribution		
Externality Factor	10%	199 IAC 35.9(7)a	7.5%	199 IAC 35.10(4)a
Line Loss	Industrial: 4.86%	See line losses spreadsheet.	N/A	
	Residential, Commercial, and Agricultural: 5.75%			
Discount Rates	Utility and RIM Discount Rate: 7.86%			199 IAC 35.2: Weighted Average Cost of Capital RPU-2010-0001, See discount rates spreadsheet.

	Electric	Source	Natural Gas	Source
	Participant Discount Rate: 10%			IPL Judgment
	Societal Discount Rate: 3.640%			199 IAC 35.2: See EEP discount rates spreadsheet.
Inflation Rate	1.8%			Bureau of Labor Statistics, Consumer Price Index – November 2012 release

c) Please see the Appendix E work paper electronic spreadsheet file titled, "Appendix E - Discount Rates (Work Paper).xlsx."

**11. Table 2.32 "Annual Electric Impacts by Programs"**

a) IPL shall revise the column headings currently listed as "Gas Savings (therms)" and "Capacity Savings (therms)" to reflect electricity measurements (kWh or KW).

**Response:**

The column headings in Table 2.32 in the Plan filed on November 30, 2012, contained typographical errors as noted in Board Appendix A, Item No. 11. This has been corrected in the Revised Plan, in the renumbered Table 2.34.

**Volume II, Application, Appendix A, Customer Rate and Bill Impacts:**

**12. A reference to IPL's most recent natural gas rate case as "RPU-2012-2012" shall be changed to "RPU-2012-0002."**

**Response:**

IPL has revised the incorrect docket number on page 1 of Appendix A from "RPU-2012-0012" to "RPU-2012-0002."

**13. A reference to Tables A1 and A2 describes the tables as "reflecting the allocation of individual program costs to the eligible customer classes following Board approved allocation methodologies." These**

**"Board-approved allocation methodologies" shall be identified and explained. These explanations shall also include the categories of cost to which each method applies and why, and the source of the allocation factor.**

**Response:**

IPL utilizes the same allocators as those found in the Annual Energy Efficiency Cost Recovery (EECR) filings (see Docket Nos. TF-2012-0015 and TF-2012-0016). There are three different allocators used in the electric filing to allocate costs, which cannot be directly assigned to a program, and two allocators used in the natural gas filing. A "Common Allocator" allocates joint EEP program costs for both the residential and non-residential customers on the basis of total non-EECR revenues. Additionally, a "Non-residential Allocator" allocates non-residential EEP program costs that are not specific to a particular non-residential program on the basis of the ratio of non-residential non-EECR revenues to the various non-residential customer classes. There are separate Common and Nonresidential allocators for each utility (natural gas or electric). The revenues used in the development of these allocators can be sourced from the most recent revenue requirements rate cases. In addition, specific to the electric utility, there is Nonresidential Load Management allocator used to allocate interruptible credits to the electric customer classes. This allocator is based upon the most current average and excess allocator utilized in the class cost of service study from the most recently litigated electric rate case.

- 14. IPL shall review Table A1, page 2 of 2. The numbers on line numbers 38 and 39 are not consistent with the numbers in the "Application" at Table 2.27 "Natural Gas Budget by Program (2014). IPL shall update either Table A1 or Table 2.27 so the tables are consistent or provide an explanation of the differing numbers.**

**Response:**

The “Next Plan” development costs of \$19,389 are reflected in Table 2.29 in the revised Application (Table 2.27 in the original Application). In Table A1, page 2 of 2, “Next Plan” development costs are reflected as \$58,169. The amounts reflected in Table 2.29 are the correct amounts. Table A1 has been revised in Appendix A – EEP Notice (rate impacts)\_Revised.xlsx.

**Volume II, Application, Appendix C, Electric and Natural Gas Load Forecasts:**

**15. On pages 13-26 (Section 2.1.6 Methods and Assumptions):**

- a) **Indicate whether the IPL Electric Forecast presented in Appendix C.1 is the same as the Load Forecast presented in IPL's 2012 Integrated Resource Plan (referenced in Appendix E – Electric Avoided Costs). If not, explain any differences.**

**Response:**

The IPL forecast in Appendix C.1 is the same as the Load Forecast presented in IPL’s 2012 Integrated Resource Plan.

**Volume II, Application, Appendix D, Electric Customer Class Load Profiles:**

**16. On page 4:**

- a) **For greater clarity, the text response under Section 2.3 Class Load Data shall be amended as follows:**

**The class load data can be found in Tables 1 through 5~~Table 2~~. The classes are Residential, General Service and Large General Service.**

- b) **For greater clarity, the two text responses under Section 2.3.1 Class System Maximum Demand shall be amended as follows:**

- i. **The total system class maximum demands can be found in Table 1. Total number of customers and kilowatt-hour sales for each class can be found in Table 5.**

- ii. **The total system class maximum demands allocated to jurisdiction can be found in Table 1. Jurisdictional class kilowatt-hour sales and number of customers can be found in Table 5.**

**Response:**

a) and b) The recommended changes have been made to Appendix D in the revised filing.

**17. On page 5:**

- a) **For greater clarity, the text response under Section 2.3.3 Class Contribution shall be amended as follows:**

**Total class contribution to the monthly maximum system coincident demands can be found on Table 2 ~~as reported in Section 2.3 Class Load Data~~.**

**Response:**

The recommended changes were made to Appendix D in the revised filing.

**18. On page 6:**

- a) **The second paragraph of the text response under Section 2.3.6 Methods and Assumptions states:**

**IPL developed the total system class and system peak loads for the Iowa jurisdiction by using the combined ratio method. Iowa kWh's in the Northeastern Zone (i.e., IPL's predecessor Interstate Power Company service territory) were used in the analysis of the following classes: Residential, General Service (Commercial) and Large General Service (Large Power and Light). For Large General Service analysis, census customers for Minnesota were excluded. See Table 5 for the monthly billed kWh's and customers by class used in the analysis.**

- i. **Fully explain the "combined ratio method," its rationale, and how it was applied for each customer class.**
- ii. **Fully explain how "Iowa kWh's in the Northeastern Zone (i.e., IPL's predecessor Interstate Power Company service**

territory)" were used in the analysis, whether their use differed among customer classes, and if so how and why.

- iii. Regarding the statement "[f]or Large General Service analysis, census customers for Minnesota were excluded," does this mean Minnesota customers were excluded from the Large General Service load research sample, or does it mean something else? Explain.

**Response:**

a)i. The ratio method uses the ratio of the average hourly load to the average billed sales times the total population billed sales to arrive at a class level estimate of hourly load. The combined ratio method means that multiple strata are combined in determining the class level ratio. The equation is provided below.

$$\text{Eq.1: Residential Average Hourly Load/Residential Average Billed Sales X Total Population Billed Sales}$$

- a.ii. Each Class is analyzed as follows:
  - a. Residential: There are two samples. One sample is based on Interstate Power Company (IPC) data (both Minnesota and Iowa) and the other on IES Utilities (IES). The IPC data is analyzed in total and then allocated between the states. Then the IES portion is added to get IPL-Iowa level data.
  - b. General Service: The sample was redesigned as an IPL sample, so the jurisdictional allocation occurs on the IPL-level data.

c. Large General Service (LGS): LGS is done similar to the method used for Residential, with two samples at IPC and IES, with IES being joined to IPC-Iowa data.

a.iii. No customers were excluded from the sample. For all classes, the Minnesota customers are included in the IPL system level data, but not in the IPL-Iowa data. This line has been removed from Appendix D in the revised filing.

**Volume II, Application, Appendix E, Electric Avoided Costs:**

**19. On page 3 (also pages 4, 5, 8, 10, 14, and 17):**

**a) Appendix E has multiple references to "IPL's 2012 Integrated Resource Plan (IRP)." A copy of IPL's 2012 Integrated Resource Plan shall be filed as an addendum to Appendix E in this docket (EEP-2012-0001).**

**Response:**

Please see new Confidential Appendix L titled, "IPL 2012 Integrated Resource Plan."

**20. On page 5:**

**a) Based on information in Appendix E5 (in both the electronic and printout versions of "TAB: Input\_assumptions" and "TAB: Generation carrying charge"), the text response to 199 IAC 35.9(6)"c"(2) shall be amended as follows:**

**(2) The installed cost of a simple cycle combustion turbine (SCCT, or CT) is \$766 per kilowatt (kW) in 2012 dollars (2012\$). The assumed unit is a 189 MW CT. See Table E4, found in Appendix E4 (Confidential) for more details. For the development of Table E4, the capacity costs in IPL's IRP were updated from 2010 costs. The result of that update is that the CT capacity costs were escalated by six percent from 2010 to 2012. However, for ~~For~~ the economic carrying charge calculation, a ~~the~~ nominal inflation rate of 16 ~~48~~ percent from 2010 to 2012 is reduced by the assumed rate of**

technical change of one percent so that the installed cost becomes \$830.30 ~~\$830.75~~ in 2012\$. This value is seen in Table E6, found in Appendix E5 - TAB: Generation carrying charge, column H.

b) Based on information in Appendix E5 (in "TAB: Generation carrying charge"), the text response to 199 IAC 35.9(6)"c"(5) shall be amended as follows:

(5) As shown in Table E6, found in Appendix E5 - TAB: Generation carrying charge, Column O, the anticipated net present value of the revenue requirements for a simple cycle combustion turbine is \$1,231 ~~\$1,093~~ per net kW.

**Response:**

Please see the revised portion of Appendix E titled, "Appendix E5\_Revised.xls."

**21. On page 21 (Table E6, Appendix E5 – "TAB: Transmission carrying charge"):**

a) The Annual Economic Costs under column P shall be adjusted by the same net inflation factor reflected in the avoided transmission capacity costs listed in Table E7.

b) The same adjustment shall also be made in in the corresponding electronic spreadsheet (Appendix E5 – "TAB: Transmission carrying charge").

**Response:**

Please see the revised portion of Appendix E titled, "Appendix E5\_Revised.xls."

**22. On pages 6-7:**

a) Based on information in Table E7 and Appendix E5 (in "TAB: Generation carrying charge," "TAB: Transmission carrying charge," and "TAB: Distribution carrying charge"), it appears that the text response to 199 IAC 35.9(7)"a" should be amended as follows:

The avoided electric capacity costs were developed consistent with the formula outlined in this rule and are shown in Table E7 below for the first 10 years of the planning horizon. The year 2014 values ~~value~~ in Table E7 are equivalent to the values ~~is~~ provided in Year 3 of column P of Table E6, found in Appendix E5 - TAB: Generation carrying charge, TAB: Transmission carrying charge, and TAB: Distribution carrying charge, ~~plus after applying~~ the reserve margin (generation only), loss and externality adjustments in column V, ~~and recognizing that the first value of Table E7 is for year 2012 and the first value in Table E7 is for year 2014.~~

If this is not correct, explain.

- b) The text response to 199 IAC 35.9(7)"a" makes reference to "the first 10 years of the planning horizon." Identify the total number of years in the "planning horizon."

**Response:**

a) Please see the revised portion of Appendix E titled, "Appendix E5\_Revised.xls."

b) The Electric Generation Expansion Analysis System (EGEAS) analysis covers a planning from 2012 through 2027, which is 16 years.

**23. For greater clarity, pages 18-25 shall be labeled "Table E6."**

**Response:**

Please see the revised portion of Appendix E titled, "Appendix E5\_Revised.xls."

**24. On Pages 7-8:**

- a) Regarding the text response to 199 IAC 35.9(7)"b":
- i. Define the summer and winter seasons.
  - ii. Identify the loss factor(s) used in deriving the avoided energy costs listed in Table E8.

**b) Subrule 35.6 states:**

**Any portion of any plan, application, testimony, exhibit, or work paper which is based upon or derived from a computer program shall include as a filing requirement the name and description of the computer program, and a disk and a hard copy of all reasonably necessary data inputs and all reasonably necessary program outputs associated with each such portion.**

**IPL shall include:**

- i. A description of the Electric Generation Expansion Analysis System (EGEAS) computer program used to derive the avoided energy costs.**
- ii. A disk and a hard copy of all reasonably necessary data inputs and all reasonably necessary program outputs associated with the avoided energy costs derived for Table E8 and the planning horizon.**

**Response:**

a)i. The summer season is from June 16<sup>th</sup> through September 15<sup>th</sup>.

The winter season is all other days.

a)ii. The loss factors can be found in the Appendix E work papers. See electronic spreadsheet file "Appendix E – Losses (Work Paper).xlsx."

b)i. EGEAS is a state-of-the-art modular production costing and generation expansion software package for use by utility planners to develop and to evaluate integrated resource plans, avoided costs, and plant life management plans. Developed by the Electric Power Research Institute, EGEAS is an accepted resource-planning tool in regulatory proceedings.

The inputs into the EGEAS model include forecasts of required capacity and energy, the characteristics of existing and potential new generating units, fuel price forecasts, known or expected energy purchases and sales, desired reserve margin, and the projected cost of allowances.

IPL uses the dynamic programming option in EGEAS to determine the optimized expansion plan which minimizes present value costs over the study period, while satisfying minimize reserve margin requirements and energy needs.

b)ii. There are a few steps to create, manipulate and summarize the avoided cost data for Table E8. This process is described below.

IPL uses EGEAS to calculate the raw hourly incremental costs. The EGEAS input and output files are provided as confidential files on the attached CD, included with this filing as new Confidential Appendix L - IPL 2012 Integrated Resource Plan. Because of the file type of the information included in Appendix L (EGEAS modeling-specific format), IPL is only providing a Confidential CD of the information and is not providing a hard copy or an uploaded copy. The files are included in three folders named, "Data2012AvCostUpdate," "Inter2012AvCostUpdate," and "Output2012AvCostUpdate." The file containing the hourly incremental data is "ipl.hic," which is viewable as a raw text file with a program such as Notepad.

IPL copies the data from the "ipl.hic" file and pastes it into spreadsheet "Appendix E - Updated Avoided Energy Costs Table (Work Waper).xlsx," in tab "EGEAS HIC." This tab pulls the raw data, formats the data for PivotTable use, adds flags to indicate summer/winter season, and calculates the average on-peak and off-peak price for each day.

The PivotTable on tab "pivot table of HIC" provides the summer/winter On-Peak/Off-Peak annual prices. These values are then increased by 1.92 percent for losses, and 10 percent for externalities in cells H10:M29 for use in Table E8.

**25. Of the following factors used in deriving avoided capacity costs under 199 IAC 35.9(7)"a," explain which factors should or should not be used in deriving avoided capacity costs for qualifying facilities under 199 IAC 15.5, and why:**

- a) Avoided generation capacity costs for a simple cycle combustion turbine.**
- b) Generation reserve margin factor.**
- c) Avoided transmission capacity costs.**
- d) Avoided distribution capacity costs.**
- e) Demand loss factor.**
- f) Externality factor.**

**Response:**

As it did in Docket No. TF-2012-0546, IPL believes it is important to set a context for the avoided cost discussion it is providing in the responses to the Question Nos. 25 and 26 posed by the Board. In order to avoid unnecessary duplication, IPL is including this background discussion in response to Question No. 25, but it applies equally to Question No. 26.

Specifically, IPL wishes to first explain how it calculates avoided costs and applies those avoided costs to various scenarios. IPL performs the initial avoided cost calculation in the same manner for all internal uses, through the econometric EGEAS model. EGEAS is a software package designed to examine the least-cost resource plans, purchase power options and other alternatives utilized by a utility to meet its generation requirements. The model performs a "comparative cost" function that can be indicative of an avoided cost for the utility.<sup>1</sup> This avoided cost calculation assumes the utility's load levels remain unchanged but the resource mix is altered.

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<sup>1</sup> Pursuant to 199 IAC 15.1, "Avoided costs" means the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or

For example, assume IPL's load for a particular hour is 2000 megaWatt (MW) and IPL needs to determine the avoided cost of 30 MW of wind energy. The comparative calculation allows IPL to change the generation mix so that it can calculate the cost to serve the load from 1971 MW to 2000 MW. The wind generator would then be entitled to receive those incremental avoided costs for that hour, and customers would remain indifferent since the revenue requirements would be maintained. EGEAS performs this analysis over an annual basis and provides the incremental avoided costs. This comparative calculation is used as the starting point for both IPL's biennial avoided cost filing pursuant to 199 IAC 15.3 and its five-year energy efficiency plan filings.

For the biennial avoided cost calculation pursuant to 199 IAC 15.3, this avoided cost calculation, unadjusted except for Board formatting requirements,<sup>2</sup> serves as the basis for IPL's Public Utility Regulatory Policy Act (PURPA) avoided cost rate. In other words, this is the rate that serves as the starting point for negotiating power purchase agreements between IPL and qualifying facilities. This rate may be adjusted during the negotiation process for factors such as line losses, as appropriate, but it remains unadjusted in the biennial avoided cost filing.

This same comparative cost calculation is also utilized, as noted above, in determining the avoided cost rate to be used in IPL's Cogeneration and Small Power Production (CSPP) tariff and its five-year EEP.

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qualifying facilities, such utility would generate itself or purchase from another source."

<sup>2</sup> Please see the Board's orders issued in Docket No. 199-IAC15.3 (PURPA Section 210) on December 21, 2007, and April 10, 2008.

In the case of its CSPP tariff, the power rates in the tariff for small distributed generation less than 100 kW are based on the same EGEAS supporting data used in the 2012 PURPA Report. IPL calculates the purchase rates based upon IPL's current average incremental costs as reflected in the most recent PURPA biennial filing. IPL also revises the optional capacity payment rate, based on the same installed cost of a 189 MW combustion turbine it utilizes in its EEP.

In the case of IPL's EEP, the avoided cost rate is adjusted, in compliance with 199 IAC 35.9. For example, 199 IAC 35.9(7)"b" requires adjustments to the avoided energy costs for factors such as variable operations and maintenance costs (marginal energy costs), system energy loss factors and societal costs (externalities). The avoided cost rate for IPL's EEP may, on its face, look like a different rate calculation than IPL's avoided cost rate for its PURPA filing. At the core, however, both are based on the initial comparative cost analysis through EGEAS. That same comparative cost calculation is also used in IPL's resource planning. IPL consistently uses the same base calculation as the starting point; it is only the adjustments for specific uses that produce an air of difference in the avoided cost rates.

IPL's avoided cost rates paid to qualifying facilities (QFs) are generally determined by using the lower of current market pricing or differential revenue requirements from IPL's current Resource Plan. IPL utilizes its resource planning software, EGEAS, as the starting point, to calculate a levelized rate for the particular avoided cost resource that is neutral on a customer revenue

requirement basis. This methodology recognizes several important principles, including:

- Avoided costs should vary based on the size of the resource. The larger the resource, the lower the \$/MWh (megawatt-hour) avoided cost, due to the deeper offsetting dispatch costs.
- Avoided costs should vary based on the annual energy profile. For example, wind should receive a lower \$/MWh rate than solar since wind energy production tends to be higher during off peak periods and non-summer months relative to solar.
- Avoided costs should recognize competing alternatives of a like nature. For example, avoided costs for wind should recognize the current market price for wind, and not necessarily any one developer's cost to build.

IPL does not believe application of the EEP adjusting factors would necessarily be appropriate for the PURPA QF informational filings or the CSPP tariff rate calculation. The PURPA QF price points will inherently require a more case-by-case analysis to take into consideration additional factors such as the location (which may affect line losses), capacity factor of the generating unit, and fuel source of the QF. The CSPP tariff rates are specifically set to help small QFs avoid a protracted negotiation process, since these customers have neither the market power nor resources that large generators have.

Conversely, it is not necessarily appropriate to remove these factors from a specific EEP calculation. For example, the externality factors specifically accounts for EEP considerations that may not be addressed in a raw avoided

cost determination. The externality factors specifically account for the societal costs of energy supply. This externality is unnecessary for the calculation of a QF avoided cost rate; that rate represents a pure pricing point for the purchase of energy. However, it is important to account for this externality when determining whether an EEP measure provides a societal benefit.

IPL believes its current methodology – using the same base calculation for both QF and EEP functions and then adjusting as the situation warrants – is an appropriate method.

With this context provided, IPL provides its specific response to Question No. 25.

a) To account for specific avoided capacity costs in its EEP, IPL employs the same process proscribed in 199 IAC 35.9(6)“c” of utilizing a generic combustion turbine (CT). This method has been successfully used in EEP proceedings for over 20 years. IPL used the same installed cost of a 189 MW combustion turbine in both the recently filed EEP proceeding and its capacity calculation for its small cogeneration tariff. IPL believes this is also an appropriate methodology for small supply side resources falling under 199 IAC 15.5(3) and the CSPP tariff.

IPL would caution against, however, using a standard CT externality in calculating avoided cost figures beyond its EEP and CSPP Tariff. This externality is unnecessary for the calculation of a general QF avoided cost rate that would apply to a large supply side resource falling under 199 IAC 15.5(4). These larger supply side resources may be interconnected at the transmission

level, and identified as an obtained IPL resource under Midwest Independent Transmission System Operator, Inc. (MISO\_ resource adequacy constructs. IPL acknowledges such capacity benefits when negotiating the power purchase agreement (PPA) price.

Smaller (but still too large for the CSPP tariff) renewable resources with low capacity factors (i.e., small wind farms and solar panel installations) generally do not significantly impact capacity planning, therefore the application of a CT externality is unnecessary. Capacity credits for projects with higher capacity factors, such as biogas digestors, are generally considered separately during contract price negotiations. Capacity payments are based on the levelized cost of a next plant addition such as a CT similar to EEP and CSPP filings, but converted to a \$/MWh basis, if the QF is a dispatchable resource that would qualify as an Asset Based Planning Reserve Credit (PRC) under MISO Module E.

IPL therefore does not believe this externality is a necessary addition in deriving avoided capacity costs for QFs pursuant to 199 IAC 15.5.

b) IPL does not believe a generation reserve margin factor is appropriate for <100 kW, behind the meter, supply side resources falling under 199 IAC 15.5(3). However, these customers can opt into a capacity credit so long as those QFs opt for the “As available firm power and energy” option pursuant to IPL’s tariffs. However, this option requires the QF to generate at the same time as the IPL system peak and have an average capacity factor greater

than 65 percent. In other words, the QF must essentially operate a dispatchable generator.

Additionally, IPL does not believe the application of a generation reserve margin is necessary for larger PURPA QF facility falling under 199 IAC 15.5(4). Large supply side resources may be identified as an obtained IPL resource under MISO resource adequacy constructs, and IPL may acknowledge any capacity benefits in the PPA price.

c), d), and e) For similar reasons as those given in response to b) above, IPL does not incorporate standard avoided distribution, demand, or externality factors in computing its CSPP tariff rate.

Additionally, for reasons similar to those given in response to b) above, IPL does not incorporate standard factors to account for avoided distribution, demand, or externality factors in its PURPA QF rates. Large supply side QFs connected at the transmission level would not avoid distribution capacity costs, and would not reduce demand losses and transmission capacity costs since the resource would appear as a generator instead of load reduction. Further, transmission capacity costs may potentially increase for large supply side QFs since these facilities must be connected to the grid and the grid must be upgraded to allow the generation to reach load centers. Due to the potential unique circumstances of large supply side QFs, IPL addresses these factors in PPA negotiations. For example, a wind QF located in another state may have far different transmission capacity cost factors than a biogas QF located within IPL's Iowa service territory. The application of standard factors to address these

contingencies is simply not possible, since many of these factors can be impacted by size, technology, geography, and voltage level at the point of interconnection.

f) IPL believes an externality factor for the societal cost of generation is not appropriate for small supply side resources and not appropriate for large supply side resources. IPL's EGEAS analysis, which provides the basis for avoided costs, already includes an emissions cost component for SO<sub>2</sub> and NO<sub>x</sub>. Further, efforts by the United States Environmental Protection Agency to reduce emissions are intended to address the societal costs of generation.

**26. Of the following factors used in deriving avoided energy costs under 199 IAC 35.9(7)"b," explain which factors should or should not be used in deriving avoided energy costs for qualifying facilities under 199 IAC 15.5, and why:**

- a) Hourly incremental energy costs from the base case EGEAS run for IPL's 2012 Integrated Resource Plan (IRP).**
- b) Energy loss factor.**
- c) Externality factor.**

**Response:**

IPL notes that, while not repeated here, the introductory remarks to its responses to Question No. 25 are equally applicable to IPL's responses provided in response to Question No. 26.

a) The EGEAS hourly incremental energy costs represent 1 MW of incremental load in all hours. IPL believes this provides an appropriate basis for small supply side resources covered under the CSPP tariff. Also, the EGEAS hourly incremental energy costs may even be an appropriate basis for a 1 MW PURPA QF with a high capacity factor.

However, most QFs do not have this kind of flat generating profile, and are not 1 MW in size. The supply side resource QF payments should at least recognize the generation profile of the QF, and the size of the QF. These parameters of the QF impact the type and amount of generation offset on IPL's system. IPL's Differential Revenue Requirement methodology takes these parameters into account.

b) IPL does not apply a system energy loss factor for <100 kW, behind the meter, supply side resources falling under 199 IAC 15.5(3) because they are not actually on IPL's distribution network.

Large supply side QFs connected at the transmission level would not necessarily reduce system energy losses, and instead could potentially increase transmission losses if the facilities are located away from load centers. Due to the potential unique circumstances of large supply side QFs, IPL addresses these energy loss factors in PPA negotiations.

c) For the reasons provided in the response to 25 f), IPL does not believe societal externality factors are appropriate.

**Volume II, Application, Appendix H, Assessment of Energy and Capacity Savings Potential in Iowa:**

**27. IPL shall provide available data comparable to the measure data in Appendix A.2 or in Table A.3 (of Appendix I) for the measures included in Table 8, "Measures Failing Qualitative Screening."**

**Response:**

The Statewide Assessment did not perform an assessment of measures failing the qualitative screening, so that specific data is not available. The

measures and the reasons they failed IPL’s qualitative screening are listed in Table 27-1 below. The data in the following table is also included as Addendum to Appendix I, titled “Measures Failing Qualitative Screening.”

Table 27-1: Measures Failing Qualitative Screening

Sector	Fuel	Measure Name	Reason for Exclusion
Both	Electricity	Advanced Modulating HVAC Compressors	Emerging technology
Both	Electricity	Heat Pump Dryers	Emerging technology
Both	Electricity	Water Heaters - Tankless	Increased peak demand
Commercial	Electricity	Active Chilled Beam Cooling with DOAS	Emerging technology
Commercial	Electricity	LED Replacement of Linear Fluorescent	Emerging technology
Commercial	Electricity	Ventilation and Energy Recovery	Emerging technology
Commercial	Electricity	Advanced Rooftop Packaged AC	Emerging technology
Commercial	Electricity	Hot-Humid Rooftop Unit with Dual Enthalpy	Emerging technology
Commercial	Electricity	Liquid Desiccant Hybrid AC	Emerging technology
Residential	Electricity	Advanced All-Climate Heat Pump	Emerging technology
Residential	Electricity	Hot-Dry Air Conditioners	Emerging technology
Residential	Electricity	Multifamily Building Best Practices	Emerging technology
Residential	Electricity	On-Demand Recirculation Pumps	Emerging technology
Residential	Electricity	Optimized Residential Duct Work	Emerging technology
Residential	Electricity	Robust Central Air Conditioners	Emerging technology
Residential	Electricity	Water Heaters - Add-On Heat Pump	Emerging technology
Residential	Electricity	Water Heaters - Ground Source Heat Pump	Emerging technology
Residential	Electricity	Water Heaters - Northern Climate Heat Pump	Emerging technology
Residential	Natural Gas	High-Efficiency Gas Fired Rooftop Unit	Emerging technology
Residential	Natural Gas	Water Heaters - Condensing Tankless	Emerging technology
Residential	Natural Gas	Water Heaters - Non-Condensing Gas Hybrid	Emerging technology

**28. IPL shall explain the differences between numbers in the text (on page 35 of 76 of Appendix H) to the total technical and economic potential shown in Tables 15, 16 and 18 and shall correct either the corresponding text or tables as needed and revise any other references to either this text or these tables.**

**The text states:**

**“As shown, study results indicate over 37 million therms of technically feasible natural gas energy-efficiency potential by 2023,**

the end of the 10-year planning horizon. The identified economic potential of 25.5 million therms amounts to 24% of forecasted load in 2023 and over 2 million peak day therms.” (Emphasis added.)

Table 15 (and Tables 16 and 18) shows 371,982 and 254,751 “thousand therms” of technical and economic potential, respectively. These numbers equate to 372 and 255 million therms of savings.

**Response:**

The numbers in the text should read as follows:

As shown, study results indicate nearly 372 million therms of technically feasible natural gas energy-efficiency potential by 2023. The estimated economic potential of nearly 255 million therms amounts to 24% of forecasted load in 2023, and over 2 million peak day therms.

IPL has not revised Appendix H to correspond with these changes because Appendix H is comprised of a published report dated February 28, 2012.

**29. On page 53 (of 76) Cadmus discusses the expected electric market potential if incentives are increased to cover 100 percent of incremental costs. Cadmus states, “The analysis further shows the associated electric energy savings would likely produce statewide life-cycle benefits of approximately \$450 million.” A similar statement is made regarding natural gas savings (see page 56 of 76).**

**a) IPL shall provide the details of calculations which produced the numbers in Table 32 of Appendix H (page 53 of 76), and shall also provide the inputs and calculations which produced the estimate stated as “life-cycle benefits of approximately \$450 million.”**

**b) IPL shall provide the details of calculations which produced the numbers in Table 35 of Appendix H (page 55 of 76), and shall also provide the inputs and calculations which produced the estimate stated as “life-cycle benefits of approximately \$100 million.”**

**Response:**

a) Please see the electronic Microsoft Excel file titled, “Addendum 1 to Appendix H - Effects of Incentives on Market Potential.xlsx.” The calculation of life cycle benefits are shown in the worksheet labeled, “Report Calcs.” Supporting material and sources are provided in the accompanying worksheets.

b) Please see response to item a) above.

**Volume II, Application, Appendix I, Assessment of Energy and Capacity Savings in Iowa:**

**30. IPL shall provide definitions of selected terms and abbreviations:**

- a) **“UECs” – As used in Table A.1.1. “Residential Electric Saturations, Fuel Shares, UECs” and in Table A.1.2. “Residential Gas Saturations, Fuel Shares, and UECs.”**
- b) **“EUIs” – As used in Table A.1.3. “Commercial Electric Saturation, Fuel Shares, and EUIs” and Table A.1.4. “Commercial Gas Saturation, Fuel Shares, and EUIs.”**

**Response:**

a) UEC is an abbreviation for “unit energy consumption,” defined as annual energy consumption associated with an end use (a specific type of equipment, such as a central air conditioner or heat pump) in the residential sector.

b) EUI is an abbreviation for “end-use intensity,” defined as energy consumption per unit (e.g. square foot of floor space in the commercial sector) for the electric equipment configurations.

These have also been included in the list of acronyms accompanying the Plan.

## ERRATA

Additionally, IPL has made certain revisions to its Plan to accommodate the correction of certain numerical input errors in its initial filing. Specifically, IPL's avoided natural gas capacity costs for winter and summer periods were reversed (resulting in a slight underestimation of benefits for natural gas measures as well as electric measures with natural gas savings), and the societal discount rate and IPL weighted cost of capital were not updated (resulting in a slight overstatement of avoided costs). These revisions did not cause any impact on IPL's recommended Plan for 2014-2018. Specifically, while certain numerical adjustments result from correction of the error, no specific energy efficiency measure is either dropped or added as a result of the adjusted calculations. Because the numerical revisions were extensive, IPL did not individually highlight every revised number in the Plan and Appendices. Instead, IPL provides Attachment A to this Additional Information, containing a comparison of the calculation results in the original filing and the revised filing, which corrected the calculation inputs.

In addition, IPL discovered a few minor errors in the November 30, 2012, filing in the course of preparing this revised submission. Those errors are as follows:

- Request for Approval, Table 1 – Program List:
  - The originally filed Table 1 incorrectly listed Item No. 9 in this table as “Low Income Multifamily.” This designation has been revised to the correct “Low Income multifamily and Institutional Efficiency Improvements.”



## **Interstate Power and Light Energy Efficiency Plan Addendum: Summary of Modifications**

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The New Plan Addendum contains several modifications to correct for two programming errors, which occurred in the calculation of cost effectiveness.

First, the avoided natural gas capacity costs for winter and summer periods were reversed, leading to a slight underestimation of avoided cost benefits for natural gas measures and electric measures with natural gas savings.

Second, the societal discount rate of 3.56 and the IPL weighted cost of capital of 7.44 that are in effect for the current energy efficiency plan failed to be updated to the projected 3.64 percent and 7.86 percent for the two tests. This error led to avoided costs being overstated by a small amount.

The two errors, working in opposite directions, thus nearly cancelled out with a negligible effect on the performance of the portfolio as a whole, lowering the Plan's benefit-to-cost ratio from 2.50 to 2.48.

Table 1 on the following page outlines specific modifications that were made to the Plan and identifies the location of each modification relative to both the 2014 – 2018 Plan submitted on November 30, 2012, and the Revised 2014-2018 Plan, filed on January 25, 2013.

Table 2 outlines modifications made to Penticoff Direct Testimony.

**Table 1. Modifications to IPL Energy Efficiency Plan**

Location in Plan filed 11/30/12		Location in Revised Plan filed 1/25/13			Modification
Page Number <sup>1</sup>	Section/Table Reference	Volume, Book, Chapter	Page Number <sup>2</sup>	Section/Table Reference	
11	Section 1.5	V1, B1, C1	12	Section 1.5	Updated total plan societal cost-benefit ratio
14	Table 1.6	V1, B1, C1	14	Table 1.4	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Total Plan societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Total Plan societal, utility and ratepayer test calculation</li> <li>• Updated benefit/cost ratio calculated for Total Plan societal and utility test</li> </ul>
15	Table 1.8	V1, B1, C1	15	Table 1.6	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Electric societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Electric societal, utility and ratepayer test calculation</li> <li>• Updated benefit/cost ratio calculated for Electric societal, utility and ratepayer test</li> </ul>
16	Table 1.10	V1, B1, C1	16	Table 1.8	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Natural Gas societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Natural Gas societal, utility and ratepayer test calculation</li> <li>• Updated benefit/cost ratio calculated for Natural Gas societal, utility and ratepayer test</li> </ul>
47	Table 2.10	V1, B1, C2	53	Table 2.12	<ul style="list-style-type: none"> <li>• Updated Electric and Natural Gas retail rates assumptions</li> </ul>
47	Section 2.5.4	V1, B1, C2	54	Section 2.5.4	<ul style="list-style-type: none"> <li>• Updated total plan societal cost-benefit ratio</li> </ul>
51	Table 2.12	V1, B1, C2	57	Table 2.14	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Total Plan societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Total Plan societal, utility and ratepayer test calculation</li> <li>• Updated benefit/cost ratio calculated for Total Plan societal and utility test</li> </ul>
52	Table 2.14	V1, B1, C2	58	Table 2.16	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Electric societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Electric societal, utility and ratepayer test calculation</li> <li>• Updated benefit/cost ratio calculated for Electric societal, utility and ratepayer test</li> </ul>
53	Table 2.16	V1, B1, C2	59	Table 2.18	<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Natural Gas societal, utility and ratepayer test calculation</li> <li>• Updated net present value costs used in Natural Gas societal, utility and ratepayer test</li> </ul>

Location in Plan filed 11/30/12		Location in Revised Plan filed 1/25/13			Modification
Page Number <sup>1</sup>	Section/Table Reference	Volume, Book, Chapter	Page Number <sup>2</sup>	Section/Table Reference	
					<ul style="list-style-type: none"> <li>calculation</li> <li>• Updated benefit/cost ratio calculated for Natural Gas societal, utility and ratepayer test</li> </ul>
93	Table 2.34	V1, B1, C2	99	Table 2.36	<ul style="list-style-type: none"> <li>• Updated program-level Total Plan, Electric, and Natural Gas benefit-cost ratios</li> </ul>
98	Table 3.3	Table was removed due to formatting changes required by Gold Memo. Energy efficiency portfolio level cost effectiveness now provided in Volume 1, Book 2: <u>Introduction</u> section text pages 2-3.			<ul style="list-style-type: none"> <li>• Updated net present value benefits used in Energy Efficiency Portfolio societal, utility and rate-impact measure test calculations</li> <li>• Updated net present value costs used in Energy Efficiency Portfolio societal, utility and rate-impact measure test calculation</li> </ul>
111	Section 3.1.15	V1, B2, C1	19	Section 1.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
112	Table 3.12	V1, B2, C1	19	Table 1.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
127	Section 3.2.15	V1, B2, C3	35	Section 2.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
128	Table 3.21	V1, B2, C3	35	Table 2.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
137	Section 3.3.15	V1, B2, C3	44	Section 3.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
137	Table 3.30	V1, B2, C3	44	Table 3.9	<ul style="list-style-type: none"> <li>• Updated electric benefits, costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> </ul>
145	Section 3.4.15	V1, B2, C4	52	Section 4.14	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
145	Table 3.38	V1, B2, C4	52	Table 4.8	<ul style="list-style-type: none"> <li>• Updated electric benefits, costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated electric benefit-cost ratio for societal test</li> </ul>
158	Section 3.5.15	V1, B2, C5	65	Section 5.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
159	Table 3.48	V1, B2, C5	66	Table 5.10	<ul style="list-style-type: none"> <li>• Updated natural gas and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
171	Table 3.57	V1, B2, C6	79	Table 6.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas benefit-cost ratios for utility, ratepayer, and societal tests; and total program benefit-cost ratio for ratepayer test</li> </ul>

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Page Number <sup>1</sup>	Section/Table Reference	Volume, Book, Chapter	Page Number <sup>2</sup>	Section/Table Reference	
180	Section 3.7.15	V1, B2, C7	89	Section 7.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
180	Table 3.66	V1, B2, C7	89	Table 7.9	<ul style="list-style-type: none"> <li>• Updated natural gas and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
189	Section 3.8.15	V1, B2, C8	99	Section 8.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
190	Table 3.75	V1, B2, C8	99	Table 8.9	<ul style="list-style-type: none"> <li>• Updated natural gas and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas benefit-cost ratios for utility, ratepayer, and societal tests; and total program benefit-cost ratios for utility and societal tests</li> </ul>
199	Section 3.9.15	V1, B2, C9	109	Section 9.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
199	Table 3.84	V1, B2, C9	109	Table 9.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas benefit-cost ratios for utility, ratepayer, and societal tests; and total program benefit-cost ratios for utility and societal tests</li> </ul>
207	Section 3.10.15	V1, B2, C10	118	Section 10.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
210	Table 3.92	V1, B2, C10	118	Table 10.8	<ul style="list-style-type: none"> <li>• Updated natural gas and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated natural gas benefit-cost ratio for ratepayer tests; and total program benefit-cost ratios for ratepayer and societal tests</li> </ul>
223	Section 3.11.15	V1, B2, C11	135	Section 11.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
224	Table 3.101	V1, B2, C11	135	Table 11.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated electric benefit-cost ratios for utility and societal tests; and natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> <li>• Update \$/kWh value under electric program ratepayer results</li> </ul>
237	Section 3.12.15	V1, B2, C12	149	Section 12.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>
238	Table 3.110	V1, B2, C12	149	Table 12.9	<ul style="list-style-type: none"> <li>• Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>• Updated electric and total program benefit-cost ratios for utility and societal tests; and natural gas benefit-cost ratios for utility, ratepayer, and societal tests</li> <li>• Updated \$/kWh value under electric program utility and ratepayer results; and \$/therm values under ratepayer and societal results</li> </ul>
254	Section 3.13.15	V1, B2, C13	166	Section 13.15	<ul style="list-style-type: none"> <li>• Updated program-level benefit-cost ratio</li> </ul>

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Page Number <sup>1</sup>	Section/Table Reference	Volume, Book, Chapter	Page Number <sup>2</sup>	Section/Table Reference	
255	Table 3.119	V1, B2, C13	166	Table 13.9	<ul style="list-style-type: none"> <li>Updated natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated natural gas program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
269	Section 3.14.15	V1, B2, C14	181	Section 14.15	<ul style="list-style-type: none"> <li>Updated program-level benefit-cost ratio</li> </ul>
269	Table 3.128	V1, B2, C14	181	Table 14.9	<ul style="list-style-type: none"> <li>Updated electric, natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated electric benefit-cost ratios for utility and societal tests; and natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
286	Section 3.15.15	V1, B2, C15	198	Section 15.15	<ul style="list-style-type: none"> <li>Updated program-level benefit-cost ratio</li> </ul>
287	Table 3.137	V1, B2, C15	198	Table 15.9	<ul style="list-style-type: none"> <li>Updated electric and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated electric benefit-cost ratios for utility and societal tests; and total program benefit-cost ratios for utility and societal tests</li> </ul>
290	Table 4.3	Table was removed due to formatting changes required by Gold Memo. Portfolio-level societal cost effectiveness was not calculated for the Outreach, Education, and Training portfolio.			<ul style="list-style-type: none"> <li>Updated net present value benefits used in Outreach, Education, and Training (OET) Portfolio societal, utility and rate-impact measure test calculations</li> <li>Updated net present value costs used in OET Portfolio societal, utility and rate-impact measure test calculation</li> </ul>
303	Table 4.7	V1, B2, C16	208	Table 16.4	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
300	Section 4.2.15	V1, B2, C17	219	Section 17.15	<ul style="list-style-type: none"> <li>Updated program-level benefit-cost ratio</li> </ul>
310	Table 4.16	V1, B2, C17	219	Table 17.9	<ul style="list-style-type: none"> <li>Updated natural gas, and total program benefits and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated natural gas and total program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
321	Table 4.23	V1, B2, C18	230	Table 18.7	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
331	Table 4.28	V1, B2, C19	240	Table 19.5	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
340	Table 4.32	V1, B2, C20	249	Table 20.4	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
349	Table 4.37	V1, B2, C21	259	Table 21.5	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
357	Table 4.41	V1, B2, C22	267	Table 22.4	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>

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Page Number <sup>1</sup>	Section/Table Reference	Volume, Book, Chapter	Page Number <sup>2</sup>	Section/Table Reference	
368	Table 4.45	V1, B2, C23	278	Table 23.4	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
371	Table 5.3	Table was removed due to formatting changes required by Gold Memo. Demand response portfolio level cost effectiveness now provided in Book 2: <u>Introduction</u> section text page 5.			<ul style="list-style-type: none"> <li>Updated net present value benefits used in Demand Response (DR) Portfolio societal, utility and ratepayer test calculations</li> <li>Updated net present value costs used in DR Portfolio societal, utility and ratepayer test calculations</li> <li>Updated benefit cost ratios for societal, participant, utility and ratepayer tests</li> </ul>
381	Section 5.1.5	V1, B2, C24	288	Section 24.15	<ul style="list-style-type: none"> <li>Updated program-level benefit-cost ratio</li> </ul>
381	Table 5.13	V1, B2, C24	288	Table 24.10	<ul style="list-style-type: none"> <li>Updated electric program benefits, costs, and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated electric program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
390	Section 5.2.15	V1, B2, C25	297	Section 25.15	<ul style="list-style-type: none"> <li>Updated program-level benefit-cost ratio</li> </ul>
390	Table 5.21	V1, B2, C25	297	Table 25.8	<ul style="list-style-type: none"> <li>Updated electric program benefits, costs, and net benefits for program-level utility, ratepayer, and societal test cost effectiveness calculation</li> <li>Updated electric program benefit-cost ratios for utility, ratepayer, and societal tests</li> </ul>
391	Table 6.2	Table was removed due to formatting changes required by Gold Memo. Portfolio-level societal cost effectiveness was not calculated for Other Funding Initiatives.			<ul style="list-style-type: none"> <li>Updated net present value costs used in Other portfolio societal, utility, and ratepayer test calculations</li> </ul>
396	Table 6.5	V1, B2, C26	303	Table 26.3	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>
406	Table 6.9	V1, B2, C28	313	Table 28.2	<ul style="list-style-type: none"> <li>Updated electric, natural gas and total program costs and net benefits for program-level utility, ratepayer, and societal test cost effectiveness</li> </ul>

<sup>1</sup> page numbers correspond to 2014-2018 Energy Efficiency Plan filed November 30, 2012

<sup>2</sup> page numbers correspond to 2014-2018 Energy Efficiency Plan Revised filing on January 25, 2013.

**Table 2. Modifications to Pentecoff Direct Testimony**

Location in Plan filed 11/30/12		Location in Revised Plan filed 1/25/13		Modification
Page Number <sup>1</sup>	Line number	Page Number <sup>2</sup>	Line Number	
9	13	9	13	<ul style="list-style-type: none"> <li>• Updated Plan-level discounted societal cost</li> </ul>
9	16	9	16	<ul style="list-style-type: none"> <li>• Updated Plan-level societal benefit-to-cost ratio</li> </ul>
9	18	9	18	<ul style="list-style-type: none"> <li>• Updated demand response portfolio societal benefits</li> </ul>
9	19	9	19	<ul style="list-style-type: none"> <li>• Updated demand response portfolio societal costs</li> </ul>
9	20	9	20	<ul style="list-style-type: none"> <li>• Updated demand response portfolio societal benefit-to-cost ratio</li> </ul>
9	22	9	22	<ul style="list-style-type: none"> <li>• Updated Plan-level discounted direct benefits to participants</li> </ul>
10	4	10	4	<ul style="list-style-type: none"> <li>• Updated table 1:               <ul style="list-style-type: none"> <li>○ discounted cumulative (NPV) societal benefits;</li> <li>○ discounted cumulative (NPV) societal costs;</li> <li>○ societal benefit-to-cost ratio; and</li> <li>○ discounted cumulative benefits to participants</li> </ul> </li> </ul>

<sup>1</sup> page numbers correspond to 2014-2018 Energy Efficiency Plan filed November 30, 2012

<sup>2</sup> page numbers correspond to 2014-2018 Energy Efficiency Plan Revised filing on January 25, 2013.