

**COMMERCIAL ENERGY CONSUMERS (the “CEC”)  
INFORMATION REQUEST #1**

**IN THE MATTER OF BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
 (“BC HYDRO”) 2004/2005 AND 2005/2006 REVENUE REQUIREMENTS  
APPLICATION  
AND  
BRITISH COLUMBIA TRANSMISSION CORPORATION (“BCTC”)  
APPLICATION FOR DEFERRAL ACCOUNTS**

**1.0 Reference: Application, Volume 1, Chapter 1, p. 1-9, Section 2.4, Trade Revenues (BCUC Information Request No. 1.1.1)**

**1.1 Streamflows as a percentage of average are as follows:**

Please provide the estimated stream flows percentage for FY 2004.

**1.2 Annual hydro electric energy generation are as follows:**

Please provide the estimated hydro electric generation for FY 2004.

**1.3 Net Annual Surplus Sales:**

Please provide the estimated net surplus sales for FY 2004.

**1.4 Trade Revenues:**

Trade revenues have in recent years been strongly influenced by external markets.

For the period FY2005 and FY2006 please describe the anticipated relationship of trade revenues to external markets and to the extent possible quantify the relationship to key external variables. Explain quantitatively how much of the trade revenue in each year is a function of the external variable to which BC Hydro is referring.

**1.5 Reservoir Levels:**

Please quantify the reservoir levels estimated now for the end of FY 2004 versus the reservoir levels assumed under normal water flow and normal temperature conditions for the load forecast used for FY 2005 and FY 2006. Please also quantify the reservoir level assumed at the end of FY 2006. Please supply the monthly reservoir level assumptions from beginning to end of the FY 2005 and FY 2006.

**2.0 Reference: Volume 1, Chapter 1, Application overview**

**2.1 Trade Income versus budget: (BCUC Information Request No. 1.1.2)**

The information shown in the response to the BCUC question 1.1.2 shows that 80% of the time BC Hydro's budget is under the actual performance and 20% of the time it is over the actual performance.

**2.1.1** Does BC Hydro consider it prudent to be conservative in planning for and budgeting an uncertain item such as trade income?

**2.1.2** Please quantify to the extent possible any source of variance that might affect the budget versus actual performance for forecasting trade revenue.

**2.2 Reference: Volume 1, Chapter 1, p. 1-18 (BCUC Information Request No. 1.1.4)**

**2.2.1** For non-union variable pay positions throughout the company please:

- a) Quantify the total payments made for fiscal years 2003 & 2004.
- b) Aggregate the total of cost savings and or revenue improvements claimed to be achieved for all positions for fiscal years 2003 & 2004.
- c) Identify the assumed cost savings or revenue improvement targets for fiscal years 2005 & 2006.
- d) Quantify the level of cost savings or revenue improvements included in the projections used for the rate application for each of the fiscal years 2005 & 2006.
- e) Quantify the total payment projected for the rate application for fiscal years 2005 & 2006.

**2.2.2** Please identify any processes used to verify and or confirm the claimed achievements on which the variable pay is based. Have any of these processes been audited and are there any internal reports documenting the results?

**3.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 2.2)**

**3.1 Sensitivities**

**3.1.1** For each of the items for which sensitivities are provided please identify which of these will be carried in a deferral account and the name of the deferral account.

**3.1.2** Where it is not expected that an item will be put in a deferral account please identify if the risk will fall to the shareholder or if BC Hydro intends to apply in the future for the actual results.

**3.1.3** For each item for which sensitivities were provided please identify a probability curve for the range of possible variability.

**4.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.3)**

**4.1 Trade Revenue Forecast Variability Reservoir Starting Conditions**

As the CEC understands, this information is based on forecast hydrological conditions and current starting reservoir conditions for BC Hydro. Please quantify the starting reservoir levels assumed in the trade revenue forecast of BC Hydro and explain why they are important as determinants of the trade revenue forecast.

**4.2 Trade Revenue Forecast Variability Future Growth**

The Trade Income forecast for F2008 and beyond is extrapolated from F2007, assuming 5% annual increases for most costs and revenues.

**4.2.1** Please explain why it was reasonable for BC Hydro to forecast a growth of 5% in the future.

**4.2.2** Please explain and quantify what BC Hydro views as the limits of growth.

**4.2.3** Please explain what if any barriers there are to growth at a faster rate toward the same limits.

**5.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.9)**

**5.1 Maintenance for Reliability**

**F2004 versus F2003**

(\$millions)	F2003	F2004	Increase
Distribution	67.1	74.9	7.8
Generation	49.9	48.3	(1.6)
Transmission	89.9	103.7	13.8
Total	206.9	226.9	20.0

**F2005 VERSUS F2004**

(\$millions)	F2004	F2005	Increase
Distribution	74.9	81.9	7.0
Generation	48.3	53.4	5.1
Transmission	103.7	108.9	5.2
Total	226.9	244.2	17.3

Please complete this analysis for 2005 versus 2006 as well and then for all years complete the analysis requested below:

**5.1.1** Please provide the following analysis of the increase:

Increase due to head count increase

Increase due to pay rate increase

**5.1.2** Of the total amount of maintenance in each year please identify the quantity that is preventive maintenance and the quantity that is reactive maintenance.

**5.1.3** Please identify any preventative maintenance programs being added beyond those already done in prior years.

**5.1.4** Please identify any program frequency changes made or anticipated.

**5.1.5** Please quantify the cost of any programs being added or any program frequency changes.

**5.1.6** Please identify if these are ongoing annually or identify the frequency of repetition of the maintenance requirement.

**5.1.7** For preventive maintenance programs being added or with an increased frequency. Please identify the reliability criteria to be met and the current level of reliability.

**6.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.10)**

**6.1 Capitalized Projects**

Please list all capitalized projects being carried and the anticipated date at which the project will be advanced to an in service completion.

**6.2 Abandoned projects**

**6.2.1** Please explain what BC Hydro proposes to do with any projects, which may be abandoned during 2005 or 2006 that are not identified for abandonment in the analysis presented.

**6.2.2** Please identify the impact if any of any such abandonment.

**7.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.11)**

**7.1 Burrard Generating Station (“Burrard”) - Life**

Please provide the annual remaining life expectancy for Burrard for the years 1995 – 2003.

**7.2 Burrard Generating Station – Amortization**

As CEC understands BC Hydro’s evidence limited further capital investment in the facility over the next 10 years and will reduce the net book value of the asset to zero over 10 years. This results in F2014 as the last year for amortization.

**7.2.1** What gave rise to the choice of 10 years as the period over which to amortize the investment in the Burrard?

**7.2.2** What documents were produced internally to support this decision? Please supply a copy of any such documents.

**7.3 Burrard Generating Station – Economic Value**

As CEC understands the evidence, Burrard is still expected to provide firm capacity to meet system requirements. Load resource balance studies conducted by BC Hydro shows that up to three units may be required for firm capacity in the short term. In order to ensure three units are available when required while concurrently minimizing the operating costs at Burrard, three units have been placed in generation standby mode and will be exercised on a regular basis. The remaining three units, not required for firm capacity and not expected to be dispatched for energy, will be preserved for future recall.

**7.3.1** Please explain what firming the capacity to meet system requirements means?

**7.3.2** What is the value in present value dollars of the firm capacity to meet system requirements which could be supplied by Burrard assuming it is maintained for this purpose?

**7.3.3** What is the ongoing cost of maintaining Burrard for this purpose?

**7.3.4** What is the present value of this ongoing cost?

**7.3.5** Please supply copies of the load resource balance studies referred to.

**7.3.6** What is the ‘short term’ for the purpose of providing firm capacity?

**7.3.7** What is the operating cycle regime required to operate Burrard to firm up system requirements?

- 7.3.8 What if anything limits the capability of Burrard to provide the firm capacity?
- 7.3.9 What is the next most viable option to provide firm capacity in place of Burrard?
- 7.3.10 What would this next most viable option cost?
- 7.3.11 What would be the purpose of any potential future recall of the three Burrard Units preserved for future recall?
- 7.3.12 What is the expected timeframe for a unit to be recalled?
- 7.3.13 Does BC Hydro require firm natural gas capacity to operate Burrard for firming up system requirements? If so, how much?
- 7.3.14 What is the advance time required to get firm natural gas capacity for Burrard?

#### **7.4 Burrard Generating Station – MLA Review**

- 7.4.1 Has BC Hydro taken any positions in the MLA Review with respect to the requirement for Burrard? What were they and please provide any written filing of BC Hydro.
- 7.4.2 What environmental concerns exist with respect to the Burrard Generating Station?
- 7.4.3 For each of the emission and effluent concerns please identify the levels anticipated when Burrard is operated for the purpose of firming up the system requirements?
- 7.4.4 Please provide any customer impact information BC Hydro supplied to the MLA Review regarding any analysis they might be undertaking?

#### **8.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.12)**

##### **8.1 Distribution Transformers - Write Off**

- 8.1.1 What documentation was produced internally to support the change of useful life for BC Hydro's distribution transformers? Please supply a copy of this documentation.

- 8.1.2 Are the distribution transformers depreciated as part of pooled depreciation?
- 8.1.3 What is the quantity of distribution transformers over 30 years?
- 8.1.4 What quantity of distribution transformers will become over 30 years in life during 2005 & 2006?
- 8.1.5 Does the forecast anticipate these transformers being written off?
- 8.1.6 When was the policy decision made to recognize a shorter life for distribution transformers?
- 8.1.7 Why would the write-off of transformers over 30 years not have been implemented in 2004?
- 8.1.8 How is the decision to increase depreciation on those distribution transformers less than 30 years being implemented (Is the remaining cost being depreciated over the remaining life to 30 years)?
- 8.1.9 What date is being used for the start of the life for a distribution transformer (the production date, the installed date, or the energized in service date)?
- 8.1.10 Is the year of installation being counted as a full year when determining the life of the distribution transformers?
- 8.1.11 Do distribution transformers in different parts of the province have different lives?

## **8.2 Distribution Transformers – Maintenance & Repair**

- 8.2.1 What preventative maintenance is done on distribution transformers?
- 8.2.2 What is the failure rate for distribution transformers by type of transformer and by year of in service operation?
- 8.2.3 What percentage of the distribution transformers installed for each year prior to 1974 are still in operation?
- 8.2.4 What are the repair and refurbishing options if any for distribution transformers?
- 8.2.5 Where can distribution transformers be repaired and refurbished?
- 8.2.6 What cost is required to repair and refurbish distribution transformers?

**8.2.7** Does BC Hydro repair and refurbish any distribution transformers and if so under what conditions?

**8.2.8** What are the life extension options available for distribution transformer?

**9.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.17)**

**9.1 Gas Transportation Contracts**

In Line 14 the gas transportation contract for Burrard \$9.8 and the line 17 the gas transportation contracts for Burrard \$12.8 and \$.2

**9.1.1** What is the term of each of these contracts?

**9.1.2** What provisions exist for their termination?

**9.1.3** Why did BC Hydro choose the term of each of the contracts?

**9.1.4** Please identify the contract and the quantity of each contract that is made for each purpose given. (ie for IPP supply, Burrard, to mitigate price risk)

**10.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.22)**

**10.1 Reservoir levels F2004**

**10.1.1** Why are the reservoir levels low at the end of 2004?

**10.1.2** What is the impact of drafting the reservoir levels for generating energy in 2004 versus purchasing energy?

**10.1.3** What is the total quantity of energy represented by the difference between normal reservoir levels and the lower levels projected for the end of 2004?

**10.1.4** What is the financial impact of the difference between drafting the reservoirs for energy in 2004 and the alternative of purchasing the energy in 2004?

**10.2 Purchases to refill the reservoir levels F 2005**

As CEC understands, the evidence of market electricity purchases are planned for F2005 to improve reservoir levels, to provide system head benefits as well as operating and marketing flexibility.

**10.2.1** What quantity of electricity purchases are planned for F 2005 to improve reservoir levels?

- 10.2.2 What is the total dollar cost of energy for these purchases?
- 10.2.3 What are the system head benefits anticipated from making these purchases?
- 10.2.4 What is the anticipated quantity of additional energy expected from these system head benefits for F2005?
- 10.2.5 What would be the full year quantity of energy from the system head benefits for F2005?
- 10.2.6 What is the total dollar benefit for F 2005 for the system head benefits?
- 10.2.7 What would the full year total dollar benefit be from the system head benefits?
- 10.2.8 What are the operating and marketing flexibility benefits from the purchases to improve reservoir levels?
- 10.2.9 What quantity of energy might be obtained from these flexibilities or what price benefits might be obtained from these flexibilities?
- 10.2.10 How are these flexibilities turned into benefits?
- 10.2.11 What is the potential dollar benefit of these flexibilities?

### **10.3 Further purchases to fill reservoir levels F2006**

Further market purchases for system storage recovery are planned during F2006, although the incremental benefits of such purchases diminish as system storage levels increase.

- 10.3.1 What additional purchase quantities are planned for F2006 for system storage recovery?
- 10.3.2 What is the total dollar cost of these additional purchases?
- 10.3.3 How do the incremental benefits of such purchases diminish as system storage levels increase?
- 10.3.4 Please quantify the relationship between storage levels and each of the benefits of higher levels showing which ones diminish and at what rate they diminish with higher levels.
- 10.3.5 What is the expected storage level crossover point for the benefits and the costs of achieving those benefits?

#### **10.4 Reservoir filling**

BC Hydro states at the end of its response to BCUC Information Request No. 1.2.22 that while the expected system storage level does increase between the start and end of F2005, the statement on page 5-4 was not meant to imply “reservoir filling of about 810 GWh in F2005”. Does the assertion that the statement on page 5-4 was not meant to imply reservoir filling of about 810 GWh in F2005 mean that reservoir filling is not taking place in F2005 or that the level of refilling is not necessarily 810 GWh?

#### **11.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.23)**

##### **11.1 Market prices and WECC reserve capability**

What relationship does BC Hydro expect between the WECC reserve capability percentage and the prices forecast for the electricity market? Please explain the rationale for the relationship and any changes in the relationship?

#### **12.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.24)**

##### **12.1 Load – Resource Incremental Unit Cost**

The CEC understand that IPP’s and Long Term Purchase Commitments are generally of a take-or-pay nature and will be used prior to other energy sources to meet load although their incremental cost may be higher.

**12.1.1** Based on the step curve shown and the projected prices for purchased electricity versus IPP and long-term purchases would it not be useful from a policy point of view to use more electricity purchases from the market before having to use committed take or pay energy from IPPs or long-term purchases? What analysis has BC Hydro done of this issue?

**12.1.2** What would be the total capability of BC Hydro to use electricity purchases to defer using committed IPP or long-term purchases in the future? Please quantify this capability.

**12.1.3** The step curve analysis does not appear to include any potential reductions in demand from customers under certain circumstances?

**12.1.4** Is there a reason for not including this?

**12.1.5** Are there any other potential sources of energy that BC Hydro might be able to use on a short-term basis prior to making commitments for long-term purchases or IPP energy?

**12.1.6** What is the time frame to bring on long-term purchase and IPP energy?

**12.1.7** If an IPP project were pre-approved needing only to complete construction and come on line what timeframe would be required to bring on additional energy?

**12.1.8** Are there other options to have Burrard in a regime where its role in firming up system requirements might have different costs and might reflect longer timeframes to bring it on line?

**13.0 Reference: Application, Volume I, Chapter 2, Consolidated Revenue Requirements and Financial Schedules (BCUC Information Request No. 1.2.38)**

**13.1** The increase in corporate allocations from F2003 to F2004 is largely attributable to the increased non-current service pension costs due to the amortization of the experience losses on the assets held in the pension plan, the increase in asset costs (depreciation and finance charges) in BCH SAC for large IT systems in F2003 (please see BC Hydro's response to BCUC Information Request No. 1.101.1), and increased costs associated with implementing the Energy Plan (please see Chapter 3, Page 3-46). The increase from F2004 to F2005 is largely attributable to the increase in HydroGEN and Strategic R&D funding (please see BC Hydro's responses to BCUC Information Request No. 1.3.3 and 1.3.4 and Chapter 3, Pages 3-50 and 3-51), the increase in asset costs (depreciation and finance charges) in BCH SAC for large IT systems in F2004, the increase in catastrophic insurance cost for the same coverage, and the costs for managing BC Hydro's relationships with ABS and BCTC (please see BC Hydro's response to BCUC Information Request No. 1.103.0, and Chapter 3, Page 3-40).

**13.1.1** Please quantify the cost increases according to the explanations given above.

2003 - 2004

Pension Experience Loss Amortization	\$X
Large IT Systems Costs Interest	\$X
Large IT Systems Costs Depreciation	\$X
Energy Plan Implementation Costs	\$X

2004 - 2005

HydroGen & Strategic R&D funding	\$X
Large IT Systems Costs Interest	\$X
Large IT Systems Costs Depreciation	\$X
Catastrophic Insurance Costs	\$X
Costs for BC Hydro ABS relationship	\$X
Costs for BC Hydro BCTC relationship	\$X

**13.1.2** What is the policy for amortizing experience losses in the pension plan?

- 13.1.3 What are the large IT systems being added?
- 13.1.4 When did they come into service?
- 13.1.5 What is the amortization period for these systems?
- 13.1.6 What is the HydroGen project and what else is in the Strategic R&D funding?
- 13.1.7 How much does BC Hydro intend to spend in total on these items?
- 13.1.8 What documentation was available to support these HydroGen and Strategic R&D expenditures? Please supply a copy.
- 13.1.9 What is the expected benefit quantified in dollar terms of the hydrogen and strategic R&D expenditures?
- 13.1.10 When is this expected benefit to be realized?
- 13.1.11 Are there terms for the catastrophic insurance that could have been changed to better manage the costs of the insurance?
- 13.1.12 What documentation was available when the decision to renew the insurance was made? Please supply a copy.
- 13.1.13 What are the benefits of the ABS relationship and please quantify them?
- 13.1.14 What are the benefits of the BCTC relationship and please quantify them?
- 13.1.15 Are there any further costs anticipated to establish these relationships?

**14.0 Reference: Application, Volume 1, Chapter 3, BC Hydro Corporate Functions (BCUC Information Request No. 1.3.3)**

**14.1 Commercialization**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates an objective "advance the commercialization of Powertech and other R & D providers' intellectual property and products".

**14.1.1** How much is BC Hydro planning, for F2005 & F 2006, to spend on advancing commercialization of Powertech and other R&D provider's intellectual property and products?

**14.1.2** What projects are planned for such commercialization advancement?

**14.1.3** Please provide the BC Hydro's business case for any such projects?

**14.1.4** Please describe BC Hydro's past success in commercializing products and provide a determination of BC Hydro's return on investment for such commercialization activity.

**14.1.5** Please provide any internal reports documenting the merits of BC Hydro participating in such commercialization of products.

**14.1.6** Please provide copies of the current rationale for BC Hydro participation in commercialization of products, if BC Hydro is planning any expenditure for such commercialization.

## **14.2 Return on Investment**

In response to BC Hydro's Information Request No. 1.3.3, BC Hydro indicates an objective to "promote technology transfer to ensure return on R & D investments."

**14.2.1** What technology is being transferred, where is the technology being transferred and to whom?

**14.2.2** Please quantify the F2005 & F2006 expenditures planned by BC Hydro for technology transfers.

**14.2.3** How will the technology transfers ensure a return on the R&D investments?

**14.2.4** Please quantify the return on investment for past technology transfers of BC Hydro.

**14.2.5** Please provide any methodology being used to determine the return on investment.

**14.2.6** Please provide a list of R&D investments made by BC Hydro for which a return on investment is being sought through such transfer.

**14.2.7** Please quantify the total R&D investment for each item on the list.

## **14.3 Business Case**

BC Hydro indicates that in response to BCUC Information Request No. 1.3.3, "some of the budget will be spent on multi-year projects currently underway with the balance spent on new projects, provided a good business case can be made for each of these new projects".

**14.3.1** For the projects currently underway please provide the business cases made for each of the projects.

**14.3.2** Please provide the total anticipated expenditure for each of the projects under way and the projected net benefit from use of the research.

**14.3.3** Please identify the new projects planned but not currently underway.

**14.3.4** Please provide the business cases for any of these projects, which have had business cases prepared and identify the schedule for the preparation of business cases on the others.

**14.3.5** Please identify the budget for F2005 & F2006 allocated to the new projects.

#### **14.4 Ageing Infrastructure**

In response to BCUC Information Request No. 1.3.3, BC Hydro addresses Asset Management and Operations projects to address ageing infrastructure.

**14.4.1** Please identify which projects will address ageing infrastructure.

**14.4.2** Please quantify the planned BC Hydro expenditure for F2005 & F2006 for each of these projects.

**14.4.3** Please identify if any of these projects is aimed at extending the life of existing assets and if so what is the anticipated life extension if the research work proves its premises.

**14.4.4** Please provide a list of past research projects which have been aimed at ageing infrastructure and identify the amount spent on each.

**14.4.5** Please identify the benefit anticipated and the benefit realized for each. To the extent any of these was aimed at life extension for assets please provide the anticipated life extension and any life extension realized.

**14.4.6** Has BC Hydro identified its infrastructure ageing priorities? And if so, what are BC Hydro's ageing infrastructure priorities?

**14.4.7** Does BC Hydro have any studies addressing ageing infrastructure? If so, please provide the studies.

## **14.5 Energy management**

In response to BCUC Information Request No. 1.3.3, BC Hydro identifies objectives regarding Asset Management, energy storage, automation, power quality, and reliability.

**14.5.1** Please identify which projects are planned by BC Hydro for F2005 & F2006 to deal with energy storage, automation, power quality and reliability.

**14.5.2** What energy storage projects are being researched and what is BC Hydro planning to spend on energy storage projects for F2005 & F2006?

**14.5.3** What is the expected benefit to be obtained from application of the energy storage research?

**14.5.4** Please provide any reports BC Hydro has prepared on the energy storage being researched.

**14.5.5** What automation projects are planned by BC Hydro for F2005 & F2006?

**14.5.6** What is the planned expenditure on these automation projects?

**14.5.7** What are the expected benefits of the automation research?

**14.5.8** Please identify what is the nature of the power quality problem BC Hydro has.

**14.5.9** Please quantify where the power quality problem exists and the degree to which the power quality is creating a problem. BC Hydro has provided data with respect to its reliability and the nature of the causes of the reliability outages. Which of these reliability problems is being researched?

**14.5.10** What is the anticipated benefit if the research provides solutions to the reliability problem?

## **14.6 Energy use**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates it will undertake "power Smart projects to address compact fluorescent and LED lighting technology, residential fuel cell applications, fiber accelerators and load displacement and peak demand load management." A list of the Power Smart projects currently underway was provided.

**14.6.1** What other Power Smart projects are planned for F2005 & F2006?

**14.6.2** What expenditures are planned for each of the projects underway and planned.

**14.6.3** What is the expected cost of energy or capacity savings anticipated from these projects?

**14.6.4** When would the research developed in these projects be applied?

**14.6.5** What research is BC Hydro funding that would not be the subject of research by the manufacturers or others who would be supplying the products for application at some point in the future?

#### **14.7 Power planning**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates that “Power Planning projects to address grid interconnections and cleaner energy technologies.”

**14.7.1** What power planning projects is BC Hydro planning for F2005 & F 2006?

**14.7.2** What expenditures does BC Hydro plan for F2005 & F2006 for power planning projects?

**14.7.3** What benefits are anticipated from application of the power planning research and when are the expected to be achieved?

#### **14.8 Sustainability**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates “sustainability projects in safety, environmental impact reduction, and best practices; and Dam Safety projects to assess dam seepage detection.”

**14.8.1** BC Hydro has identified some dam safety projects as ongoing and what sustainability projects are planned by BC Hydro and what level of expenditure is planned on these for F2005 & F2006?

**14.8.2** What benefits are anticipated from these projects?

**14.8.3** When are the benefits anticipated from these projects to be realized?

#### **14.9 Future Metrics**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates that “future metrics will also include the ability for R & D projects to produce:

Efficiency improvements;  
cost savings;  
service level improvements;  
sustainable benefits; and  
the creation of new business opportunities (e.g. maximize value of intellectual property).”

**14.9.1** When did BC Hydro identify the need to measure the benefits of its R&D projects in terms of its corporate objectives?

**14.9.2** What has been done to implement this form of measurement?

**14.9.3** When does BC Hydro expect to have the ability to measure its R&D in terms of its corporate objectives?

**14.9.4** How does BC Hydro prioritize its projects without information on their potential contribution to corporate objectives?

**14.9.5** Please provide documentation which BC Hydro has prepared with respect to implementing this measurement?

**14.9.6** Why would BC Hydro not wait until it knows quantitatively what it is trying to achieve with the research projects before it proceeds with the research?

#### **14.10 List of ongoing 2005 projects**

In response to BCUC Information Request No. 1.3.3, BC Hydro indicates that ”a detailed list of ongoing and active R&D projects is attached.”

**14.10.1** When are these project expected to complete?

**14.10.2** What is the expenditure planned for F2005 & F2006 for these projects?

**14.10.3** What were the planned benefits to be obtained from the research?

**14.10.4** What is know from the research already undertaken that confirms or changes the anticipation of benefits?

**14.10.5** What is known from the research undertaken already that confirms or changes the anticipated time the research will be applied.

### **15.0 Reference: Application, Volume 1, Chapter 3, BC Hydro Corporate Functions (BCUC Information Request No. 1.3.4)**

#### **15.1 Projects**

BC Hydro identifies expenditures on Strategic R & D \$5.7 million, BCTC \$1.7 million, HydroGEN \$1.3 million

**15.1.1** What are these projects?

**15.1.2** What are the expected benefits to be derived from these projects?

**15.1.3** Please quantify these benefits.

**15.1.4** When does BC Hydro expect the results of these projects to be applied?

**15.1.5** Please provide the documentation used to support the decision to proceed with these projects.

**15.1.6** What would happen to the BC Hydro system and customers if there were in sufficient money to proceed with such projects?

## **15.2 Pool Projects**

BC Hydro indicates in response to BCUC Information Request No. 1.3.4 that “The \$10 million for R & D will be treated as a pool and managed on a “best project” basis.”

**15.2.1** How will BC Hydro determine what is the “best project”?

**15.2.2** What criteria will be used to prioritize the projects?

**15.2.3** Does this mean that once a project is started it will be stopped if a higher priority project is found?

## **16.0 Reference: Application, Volume I, Chapter 4, Energy Supply Costs (BCUC Information Request No. 1.4.6)**

### **16.1 Deferral Accounts**

Please provide BC Hydro’s revised proposals with regard to the operation of the deferral accounts.

## **17.0 Reference: Application, Volume I, Chapter 4, Energy Supply Costs (BCUC Information Request No. 1.4.10)**

### **17.1 Arrow Lakes & Alcan**

BC Hydro has clarified that these contracts are firm and there is no variability with hydrological conditions.

**17.1.1** What variability based on hydrological conditions actually occur in these facilities?

**17.1.2** Is there an opportunity for BC Hydro to benefit from accessing capabilities beyond its firm contracts in these cases?

**17.1.3** Does BC Hydro take full advantage of any opportunities beyond its firm contracts? If so what are they and please quantify the benefits.

**18.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.3)**

**18.1 Heritage Payment Obligation**

In the table supplied, please break out the component of the cost of energy, which causes the spike in F2001 & F 2002 and break it out for all years.

**19.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.33)**

**19.1 Preventive Maintenance**

**19.1.1** Does BC Hydro agree that most generation equipment does not have major overhauls on an annual cycle.

**19.1.2** Please provide the preventive maintenance cycle schedules for all the significant generation equipment.

**19.1.3** Would BC Hydro agree that some maintenance can usually be deferred for a year without significantly impacting the reliability of a unit.

**19.1.4** Please identify which preventive maintenance can be deferred and which can not as well as the reason.

**20.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.34)**

**20.1 Haddon Jackson Report**

**20.1.1** Please identify and quantify each of the expenditures for BC Hydro for each of the generation plants for FY2005 & FY2006 and provide the Haddon Jackson comparative benchmark for these.

**20.1.2** Please provide these at the same level of breakdown as in the Haddon Jackson report.

**20.2 Improvement Opportunities**

Please provide a description of BC Hydro's response to each of the identified improvement opportunities and an analysis of each identifying and quantifying the opportunity potential along with identification of what stage BC Hydro is at in dealing with these opportunities.

**21.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.37)**

**21.1 Resource Smart**

Please advise if the Resource Smart gains for projects completed and for projects completing in F2005 & F2006 are included in the supply projected for and used to determine revenue requirements.

**22.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.38)**

**22.1 Design Temperatures**

CEC understands that a review of the policy on design temperature is currently underway.

**22.1.1** Why did BC Hydro establish the design temperature review project?

**22.1.2** What would be the effect of a change in the design temperature of 2 degree-days for the energy forecast in .5 degree increments?

**22.1.3** What would be the effect of a 2 degree change in the design temperature for the coldest day in .5 degree increments.

**23.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.40)**

**23.1 Business Case**

Please provide the assumptions as to the life of the project the discount rates revenue cash flows and cost cash flows for each of the economic justifications for the growth and Resource Smart capital projects provided by BC Hydro.

**23.2 GM Shrum Unit 8**

**23.2.1** Was a preliminary economic justification done for this capacity increase project? If so please provide the preliminary economic justification and the related assumptions. If not why not?

**23.2.2** Would not the scheduling of the project for 2006 require some assessment of the priority of the project?

**24.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.49)**

**24.1 Water Use Plans**

In response to BCUC Information Request No. 1.5.49, BC Hydro states that "the people involved in the Water Use Planning Project charge their costs to the capital project reported as "Water Use Programs".

**24.1.1** What is the period over which these water use plan projects are amortized?

**24.1.2** When are the water use plan projects assumed to come into service?

**25.0 Reference: Application, Volume I, Chapter 5, Heritage Contract (BCUC Information Request No. 1.5.53)**

**25.1 Water Use Plans – Remission agreement**

The estimated cost of the 20 draft WUPs that have been submitted or are pending submission is about \$34 million per year, relative to licensed water rights. Was there any written documentation of the agreement to provide remissions to BC Hydro for the water use plan impacts? If so please provide the documentation.

**25.2 Water Use Plans – Remission review**

Recently, provincial government staff has indicated that the previous government's commitment to fully compensate BC Hydro for the impacts of WUPs is under review.

**25.2.1** Has the government indicated to BC Hydro what it is going to review?

**25.2.2** Does BC Hydro know if BC Hydro and/or its customers be consulted in this review of remissions?

**25.3 Water Use Plans – depreciation and finance charges**

What is the expected period for depreciation of these projects?

**25.4 Water Use Plans – schedule**

**25.4.1** What is the expected schedule for implementation of the water use plan changes?

**25.4.2** Will BC Hydro and or its customers be consulted in the determination of the schedule for action plans?

**26.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.3)**

**26.1 BCTC Additional Ongoing Costs**

**26.1.1** Please provide for the detailed breakdown of the additional ongoing costs from F2004 to F2005 & F2006 a description of the BC Hydro division and department that used to previously perform the function.

**26.1.2** Please identify and provide any documentation demonstrating that BCTC looked for cooperative arrangements with BC Hydro or other such that the \$17.8 million annual costs of these functions could be provided more efficiently

**27.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.5)**

**27.1 AROs**

Please provide the documentation of the legal requirements to restore these sites.

**28.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.7)**

**28.1 Vegetation Management**

The cost increase from F2003 to F2004 is due to additional work programs for the Edge Tree Management program and the Integrated Vegetation Management program. The cost increase from F2003 to F2004 is due to additional work programs for the Edge Tree Management program and the Integrated Vegetation Management program and extraordinary vegetation maintenance in the Southern Interior.

**28.1.1** What would be the consequence of a deferral of \$1 million per year of the increased program expenditures?

**28.1.2** Please identify the lowest priority items in the programs that would be deferred for one year on a rolling basis and accomplished in the subsequent year.

**28.1.3** Over what period of time are these programs to be implemented and when will they be completed?

**28.1.4** Please provide documentation or analysis BC Hydro or BCTC used to determine the length of time over which to accomplish these programs.

**29.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.8)**

**29.1 Quality Assurance**

Quality Assurance activities centre around technical audits by observing and/or inspecting sample services provided to BCTC to ensure compliance and efficiency.

**29.1.1** What is the sample technique and sample size used for providing quality assurance?

**29.1.2** What changes have been recommended from prior quality assurance activity that have resulted in savings.

**30.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.14)**

**30.1 New Positions**

The evidence indicates 36 new positions for corporate and asset management functions are required.

**30.1.1** Please describe and identify the BC Hydro division or departments that formerly performed these functions or like functions.

**30.1.2** Please identify what level of activity is anticipated in the corporate functions that were being directly handled by the BC Hydro corporate functions.

**30.1.3** Please identify and quantify the decreases in the BC Hydro corporate functions, which match the increases in the BCTC corporate functions and identify and quantify the net increases.

**30.1.4** Please identify and describe what BCTC and BC Hydro have done to coordinate corporate functions to minimize additional costs.

**30.1.5** Please supply documentation of the decision-making that went into the determination of the appropriate level of increases.

**30.1.6** What alternatives did BCTC look at for each function for which net staffing is added?

**30.1.7** Please identify the jobs and provide descriptions of the intended functions for each of the 14 strategic and investment planning, stakeholder relations, and technology positions added.

**30.1.8** Please provide any business case documentation for the addition of these expenditures.

**30.1.9** What if any savings or benefits is expected to be delivered by these positions and when?

**30.1.10** What priorities would BCTC exercise if it were required to cut back its complement of additional staffing for each of the following scenarios; by 5, 10, 15, 20 and 25 positions?

**31.0 Reference: Application, Volume I, Chapter 6, Transmission (BCUC Information Request No. 1.6.17(a))**

**31.1 Sustaining Capital - Life Extension**

**31.1.1** Please identify for all sustaining capital the ones that are in part related to life extension and please quantify the life extension sought for each planned sustaining capital expenditure brought into service in F2005 & F2006.

**31.2 Capitalization Policy**

Please provide a copy of the BC Hydro capitalization policy.

**32.0 Reference: Application, Volume I, Chapter 11, Capital Expenditures (BCUC Information Request No. 8.6)**

**32.1 Computer IT Expenditures**

**32.1.1** For each of the project category groupings please provide the benefits anticipated to be achieved in FY2005 & FY 2006.

**32.1.2** Please provide any cost benefit studies for any significant projects in these categories.

**32.1.3** Please identify BC Hydro's priorities for these IT expenditures and which projects would be deferred if there were insufficient funds to make the capital investments currently planned for each of the following scenarios; \$5, \$10, \$15, \$20, \$25 million less per year.

**33.0 Reference: Application, Volume I, Chapter 11, Capital Expenditures (BCUC Information Request No. 1.8.12)**

**33.1 GM Shrum Transformer Replacement – Cost Justification**

Please provide the timeframes used for this analysis, the discount rates, and the benefit assumptions and the cost estimates used to make this evaluation of alternatives.

**34.0 Reference: Application, Volume 1, Chapter 6, p. 6-36 (BCUC Information Request No. 1.11.7)**

**34.1 Wood Pole Replacement Cost**

BCTC expects that pole replacement costs could be up to \$50,000. Please clarify what the \$50,000 is. Is it \$50,000 per pole replacement or was it intended to be a different dimension to the number.

**34.2 Wood Pole Replacement Costs**

The replacement cost is inclusive of labour, materials, vehicles and equipment. Do the cost for replacement capital include overhead charges and if so how much and on what basis is it included?

**35.0 Reference: Application, Volume 1, Chapter 7, Section 2.7, pp. 7-23 and 7-24**

**35.1 Pole Test**

When a pole test and treat program identifies a pole as too weak and needing replacement what is the area of the pole that typically is assessed to be too weak or is the pole uniformly weakened?

**36.0 Reference: Application, Volume 1, Chapter 4, p. 4-16 (BCUC Information Request No. 1.15.2)**

**36.1 Gas Contracts - Termination**

Are there any costs to termination of the Southern Crossing Project gas transportation contract with Terasen.

**36.2 Gas Contracts - Assignment**

Have the gas transportation contracts been assigned to anyone else in the past and if so to whom and at what benefit to BC Hydro?

**37.0 Reference: Application, Volume 1, Chapter 11, Table 11-1, p. 11-2 (BCUC Information Request No. 1.18.3)**

**37.1 Capital Assets In Service & Capital Expenditures - Budgets**

**37.1.1** For each of the tables provided please supply the budgeted asset in service or capital expenditure amount for each year.

**37.1.2** Please calculate the variances between budget and actual for each year.

**38.0 Reference: Application, Volume 1, Chapter 5, Section 9, p. 5-45 (BCUC Information Request No. 1.19.4)**

**38.1 First Nation Negotiation and Settlement Costs - Capitalization**

**38.1.1** Please identify what functional asset capabilities these negotiation and settlement costs would protect and preserve.

**38.1.2** Please identify over what term these negotiations and settlements are being negotiated.

**39.0 Reference: Application, Volume 1, Chapter 9, Section 5 (Powerex Corp.),pp. 9-46 to 9-50 (BCUC Information Request No. 1.23.13)**

**39.1 Powerex – Contingent Receivables**

What is the amount of the contingent receivable for the California Power Exchange Corp. and California Independent Systems Operator?

**39.2 Powerex – Contingent Receivable Resolution Accounting**

If the contingent receivables are settled in favour of Powerex what is BC Hydro's proposed accounting for those settlements and how would this accounting affect the customers and their rates?

**40.0 Reference Application, Vol. II, Tab F, pp. 14-15, 48-53 Commercial Forecasts – Methodology (BCUC Information Request No. 1.30.4)**

**40.1 Commercial Forecast**

**40.1.1** Is there any significant variability of load based on building vacancy rates for commercial buildings?

**40.1.2** Does BC Hydro take into account the average building vacancy rate for commercial buildings when making forecasts and if so what has the vacancy rate been for F2003 and F2004 and what is forecast for F2005 & F2006?

**41.0 Reference: Application, Vol. I, Tab 2, Schedules A5, 6, & 7 Revenues (BCUC Information Request No. 1.43.2)**

**41.1 Power Smart Savings - Priority**

The table provided shows a significant increase in residential power smart savings at substantially higher prices than the industrial and commercial sector savings.

**41.1.1** What are BC Hydro's priorities with respect to obtaining the Power Smart savings at the lowest possible cost?

**41.1.2** Are there additional potential Power Smart opportunities at the lower cost industrial and commercial sectors?

**41.1.3** What would be the impact on revenue requirements of BC Hydro pursuing the lowest cost Power Smart savings in the future?

**42.0 Reference: Application, Vol. I, Tab 4, pp. 4-5, 6,7, Table 4-11; Vol. II, Tab I, Tables 4-1 & 2 Power Smart since F2002 (BCUC Information Request No. 1.52.4)**

**42.1 Power Smart Amortization Rates**

Please provide the expected life for each type of energy efficiency investment.

**43.0 Reference: Application, Volume I, Chapter 2, p. 2-17 (BCUC Information Request No. 1.53.1)**

**43.1 Accounting for AROs**

Please supply the section of the CICA handbook that allows BC Hydro to account for various issues in accordance with regulator orders where Generally Accepted Accounting Practices would otherwise require a different accounting.

**44.0 Reference: Application, Vol. I, Tab 6, p. 6-9, Table 6-2 (BCUC Information Request No. 1.68.1)**

**44.1 Transmission Costs - Variances**

**44.1.1** Please breakdown for each category of cost the variance from F2003 to F2006 between the variance driven by rate or price increases (such as salary rate increases or finance charge rate increases etc.) and those variances driven by volume increases (such as staffing increases or additional assets in service etc).

**44.1.2** Please explain the variances.

**44.1.3** Are the variances likely to continue or are they one-time events or unusual events not likely to reoccur?

**45.0 Reference: Application, Volume I, Chapter 3, pp. 3-3 to 3-5; Chapter 6, p. 6-42 Budget Process and Variance Analysis (BCUC Information Request No. 1.75.9)**

**45.1 Distribution Budget Versus Actual Variance - OMA**

The major causes for variance for Distribution are described in F2003 as the Customer Information System and Emergency Restoration Costs and in F2004 as Forest Fire related emergency restoration.

**45.1.1** Are these and other sources of unfavourable variance likely to continue to be repeated or are they one time or unusual variances?

**45.1.2** What is the record for the distribution function over the last ten years in terms of budget versus actual performance?

**46.2 Distribution Budget Versus Actual Variance - Capital**

What is the record for Distribution capital over the last ten years in terms of budget versus actual performance?

**47.0 Reference: BC Hydro Response to BCUC Information Request No. 1, Question 57.1; Reference: Application, Vol. II, Tab M, pp. 1, 2 Market Transformation**

**47.0** BC Hydro states in its response that market transformation is not the only objective and focus of its Power Smart programs.

**47.1.1** Please explain BC Hydro's interpretation of "market transformation" with regards to demand side management planning and program design. In particular, at what point in the process of energy savings measure identification and program planning do market transformation considerations become relevant?

**47.1.2** Please explain why market transformation is considered a risk to BC Hydro's dsm program planning or operation?

**47.1.3** Please describe a transformed market in economic terms, including electricity supply costs and retail tariffs, and energy use practices?

**47.1.4** Please indicate the actions for each of the roles, pre- and post- market transformation in the table below.

<b>Role</b>	<b>Pre-market Transformation</b>	<b>Post-market Transformation</b>
Legislation	Required efficiency baseline, reflecting readily available equipment and products.	Updated efficiency baseline, to reflect the improved efficiency of equipment and products on the market.
Regulation		
Utilities		
Manufacturers		
Wholesalers		
Distributors		
Retailers		
Consumers		

**48.0 Reference: BC Hydro Response 1.59.1 to BCUC Information Request No. 1, Question 59.0; Reference: Application, Vol. II, appendix I, pp. 3, 5; Cost Effectiveness; Role of the Total Resource Cost Economic Test in program planning and selection.**

**48.1.1** Is the TRC considered as part of a potential program’s business case?

**48.1.2** Does the TRC criteria influence the target energy savings levels set for individual programs?

**48.1.3** BC Hydro has stated that the total cost of the Power Smart portfolio of programs must meet the TRC. BC Hydro also implies that the business case for individual programs must also meet the TRC. Please explain the purpose of the portfolio planning criteria if each program must meet the TRC.

**49.0 Reference: BC Hydro Response 1.59.2 to BCUC Information Request No. 1, Question 59.0; Reference: Application, Vol. II, appendix I, pp. 3,5; Cost Effectiveness**

**49.0** By planning to acquire only cost-effective energy efficiency savings, it would appear that the usual universality objective of utility demand side management programs is compromised.

**49.1.1** By planning to acquire only cost-effective energy efficiency savings and not designing market transformation programs, please explain BC Hydro’s exact purpose in pursuing Power Smart.

**49.1.2** Please explain, under the Heritage Contract, the benefits to distribution customers of the savings achieved at the transmission voltages on BC Hydro’s electric system.

**49.1.3** For programs to be cost effective, how long, typically, must BC Hydro offer the program to its customers?

**50.0 Reference: BC Hydro Response 1.62.1 to BCUC Information Request No. 1, Question 62.0; Reference: Application, Vol. II, Tab 1, Table 4.1: Tab M, p.8; Energy Savings – Compact Fluorescent Lighting**

**50.1** “Market Effects of BC Hydro Compact Fluorescent Lamp Initiatives”, November 2002. Accounting practices are important to determining and reporting program activity and related savings. However, it is even more important to assure ratepayers that the reported savings reasonably reflect what has been installed.

**50.1.1** What was the total change in CFL sales in 2001 and 2002?

**50.1.2** What portion of that change was attributable to BC Hydro’s program activity?

**50.1.3** What non-BC Hydro advertising or media events contributed to change in CFL changes during the period?

**50.1.4** In estimating savings impact, how were single purchases of multiple CFLs treated in terms of annual operating hours? What assumptions were made for breakage, product failure, replacement purchases, storage of CFLs, and for installations in Zone 2, outside BC Hydro’s service area, or second (vacation) homes.

**50.1.5** Please provide BC Hydro’s assessment of this report, if documented, or please explain how the impact of the results of this report on program planning estimates and program performance evaluation.

**50.1.6** Has BC Hydro developed and implemented a used-CFL collection/recycling program or facility for its customers, as recommended in the report? When can BC Hydro customers expect to see such a service provided throughout the service area?

**51.0 Reference: Application, Vol. II, appendix I, pp. 2; Core Principles**

**51.1.1** How are the Core Principles reflected in program selection criteria?

**51.1.2** Please explain how the Core Principles relate to Power Smart operations and program performance? Does BC Hydro have other principles or policies specific to meeting savings and spending targets?

**51.1.3** Please direct the CEC to the technical dsm planning criteria for energy savings measures in the Application document. Specifically, we are looking for the requirements of the electric system (by region) and the customer load

characteristics by sector and region that inform dsm planning, program design and measure selection.

**52.0 Reference: Application, Vol. II, appendix I, pp. 3; “uncertainty surrounding several key variables”**

**52.0** Given the experience with dsm world wide, there is general acknowledgement by regulators and utilities that supply side projects represent larger risks to ratepayers than demand side management projects.

**52.1.1** Please compare the risks to ratepayers of an investment in a supply resource project versus an equal investment in dsm by BC Hydro. Please consider the comparison from a project management perspective, from planning through to in service through to plant retirement or program exit.

**53.0 Reference: Application, Vol. II, appendix I, pp. 5; Total Resource Cost (TRC) Test**

**53.1.1** Please provide a list of measures or programs that have been examined and rejected for failing to meet the TRC. Once BC Hydro has corrected its application of the TRC test, will these measures/programs be screened again?

**54.0 Reference: Application, Vol. I, chapter 8, pp. 8-4**

**54.1.1** Please provide, in the table format below, actual program results detail for the years F1995 to F2003. For F2004, please provide actual program results detail for the first three-quarters and an estimate for the final quarter.

Year 19xx	Financial Incentives	Admin	Total Utility Cost	Cust. Cost	Total Resource Cost	Annual Energy Savings (kWh)	Annual Capacity Savings (kW)	Levelized Program Cost (\$/kWh)	Benefits	TRC Benefit Cost Ratio	Utility Benefit Cost Ratio
RESIDENTIAL											
Program 1											
Program 2											
Program n											
TOTAL											
COMMERCIAL											
Program 1											
Program 2											
Program n											
TOTAL											
INDUSTRIAL											
Program 1											
Program 2											
Program n											
TOTAL											
Program Total											
Planning & Evaluation											

Power Smart Total									
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For purposes of this table, annual energy savings are the energy savings captured by the program activity in the reported year. Levelized program cost is the unit cost of the program based on the PV of total program costs divided by the PV of total program energy savings (kWh) plus capacity savings (kW).