

**Bonneville Power Administration**

**Conservation**

**RESOURCE ENERGY DATA**

**The RED Book**

**Fiscal Year 2010**

**(Published 2012)**



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## **INTRODUCTION**

On Dec. 5, 1980, the 96<sup>th</sup> Congress passed the Pacific Northwest Electric Power Planning and Conservation Act (Act), Public Law 96-501. The overall purpose of the Act was to:

- Assist the electrical consumers of the Pacific Northwest through use of the Federal Columbia River Power System to achieve cost-effective energy conservation,
- Encourage the development of renewable energy resources,
- Establish a representative regional power planning process, and
- Assure the region of an efficient and adequate power supply.

The Bonneville Power Administration (BPA), in compliance with the Act, has sponsored and funded various energy conservation programs for the benefit of Pacific Northwest consumers for over a quarter of a century. These programs have been successful due to the cooperation and assistance of BPA's electric utility customers.

## **PURPOSE**

The Resource Energy Data (RED) Book summarizes data on cost and savings pertaining to the BPA energy conservation acquisition programs. The document provides information and references for general audiences and for use in preparing general publications.

## **ORGANIZATION**

The RED Book is organized as follows:

- Overview of total conservation savings from fiscal year (FY) 1982 through FY 2010.\*
- Information on current conservation programs from FY 2001 through FY 2010.
- Information on the historical conservation achievements for the period FY 1982 through FY 2000.
- Savings acquisition costs.
- Glossary of the terms used within the text and tables of the document.

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\* BPA's fiscal year runs from Oct. 1 through Sept. 30

## **IMPORTANT NOTE FOR THE USER**

The data contained in the RED Book are sensitive to changes in the assumptions surrounding them. *Use data with care* to ensure that the correct characterizations of the monetary and energy figures are used and communicated accurately.

The RED Book information is presented to the nearest tenth of an average megawatt (aMW) in most of the tables. Information in the charts and graphs *may be rounded to the nearest 5 aMW*. When presenting this information to the public, BPA recommends using rounded numbers because the agency recognizes that these data are not precise and are subject to adjustment over time.

The reported aMW savings *are first year savings only* and not the measure-life or program-life savings. Measure life is the estimated median time a measure will remain in place or the time until the structure in which a measure is installed ceases to exist.

Reported savings include transmission and distribution line-loss credit savings of 7.5 percent for all acquisition programs (2.5 percent for the aluminum Direct Service Industry Conservation Modernization program) through FY 2005. This adjustment is made to account for transmission and distribution line losses avoided through the acquisition of conservation. The line loss credit was adjusted to 7.625 percent for FY 2006 - FY 2009. In FY 2010, the line loss credit was revised to 9.056 percent, which will also apply to subsequent years. During the transmission and distribution of electricity, a certain amount of electricity is lost due to electrical resistance inherent in conductors. Since conservation causes less electricity to be consumed by the end uses, less electricity is generated and transmitted and, therefore, less electricity is lost. BPA credits its conservation with the line-loss savings. This adjustment allows conservation and generation savings to be compared from the same point in the electrical system often referred to as the “busbar.”

Data in the RED Book are as reported by April 2011 for BPA’s FY 2010. These data should be used as “official data” until the FY 2011 RED Book is published. Adjustments to the data are captured annually in the RED Book if information from evaluations or other sources indicate savings estimates should be changed. Also, dollar amounts may change from one year to the next due to revised utility reports.

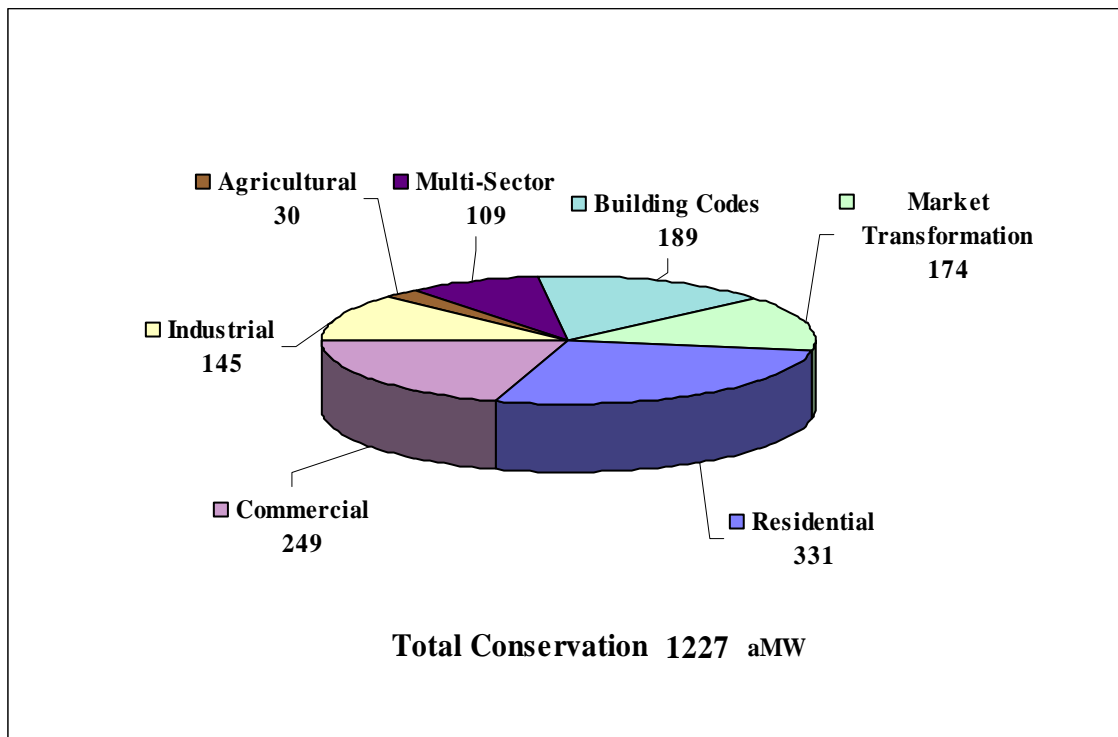
If you have any questions about how to represent or use this information, please contact – Kevin O’Sullivan, 503-230-3693, kposullivan@bpa.gov

## OVERVIEW

BPA estimates a cumulative total of 1,227 aMW of energy savings are currently being delivered to the Pacific Northwest region from BPA and BPA customer conservation programs operated during the past 29 years (FY 1982-2010).<sup>1</sup> This cumulative total includes adjustments to some of the incremental energy savings reported in previous editions of the RED Book. These adjustments account for changes in the reported number of installed conservation measures in previous fiscal years, changes in estimated energy savings for certain measures based on subsequent program evaluations, and installed measures that have “expired” or are no longer delivering energy savings. For example, energy savings from the Conservation Modernization (ConMod) legacy program (see glossary) are not included in the current total due to the closing of some aluminum industry plants where conservation projects were implemented.

Figure 1 illustrates the relative contributions from various sector and program categories toward BPA’s cumulative energy savings.

**FIGURE 1: BPA’s Cumulative Conservation Savings (aMW) by Sector, FY 1982-2010**



<sup>1</sup> Beginning in FY 2007, utility funded conservation savings, for which the utility claims credit towards its Contract High Water Mark, is included in the RED Book (in addition to BPA-funded conservation savings).

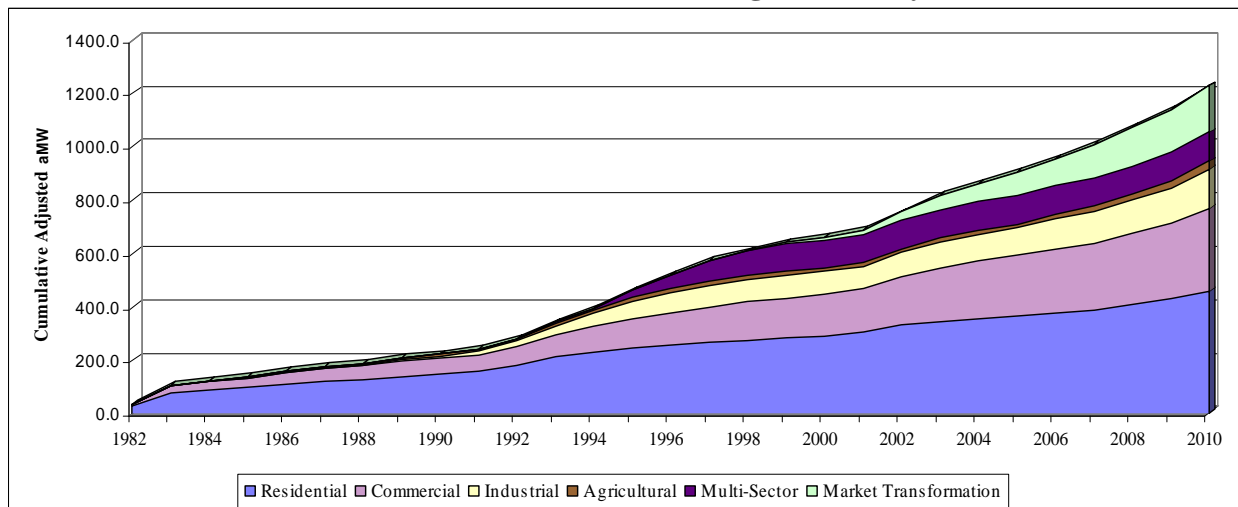
The Multi-Sector<sup>2</sup> savings include, for example, billing credits, competitive acquisitions and flex agreements. The 189 aMW of building codes consist of 129 aMW for residential building codes and 60 aMW for commercial building codes. Building code savings are a result of new building codes that were passed in 1985 and model conservation standards (or codes close to MCS) that were implemented in Washington in 1991 and in Oregon, Idaho and Montana in 1992. Commercial MCS were implemented in Washington in 1994 and in Oregon in 1996. Savings from building codes and MCS are estimated through a backward-looking methodology in the load forecast and, therefore, are only approximate.

Residential code savings from 2003 forward are no longer counted and Commercial code savings are not counted as of 2005 because it is estimated that these codes would have reached current standards by those dates. In 2003, Idaho adopted a code equivalent to the 1988 MCS. Oregon and Washington codes had gone beyond MCS by this time, and current practice in Montana was equivalent to the MCS. Although the national energy codes and international energy codes on which Idaho codes were finally based may have been influenced by MCS efforts in the Pacific Northwest, it was appropriate to stop counting additional new benefits due to BPA's and the region's conservation efforts in the 1980s and 1990s.

## BPA'S TOTAL HISTORICAL CONSERVATION SAVINGS

Figure 2 illustrates the yearly contributions from each sector toward BPA's total savings over the 29-year history of BPA's conservation programs (FY 1982-2010).<sup>3</sup>

**FIGURE 2: BPA's Cumulative Conservation Savings (aMW) by Sector, FY 1982-2010**



<sup>2</sup> Multi-Sector is a “pseudo sector” that makes no sector distinction for the savings achieved.

<sup>3</sup> The building codes savings are included in the Residential and Commercial savings.



Table A summarizes the cumulative energy savings for FY 1982-2000 and the incremental energy savings for each fiscal year from FY 2001 through 2010.

**TABLE A: BPA's Total Conservation Savings<sup>4-5</sup> (FY 1982-2010)  
Incremental aMW**

	FY 82-00	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Total FY 82-10
Residential	179.6	6.0	19.0	11.9	11.0	10.5	10.7	12.0	20.9	18.9	30.6	331.2
Commercial	111.5	2.0	13.6	16.7	10.9	9.5	14.6	9.5	14.0	21.0	26.2	249.5
Industrial	84.9	0.5	4.0	6.7	3.8	3.4	8.2	6.8	7.1	7.6	12.4	145.4
Agricultural	14.8	0.3	0.4	0.4	0.2	0.1	0.5	3.0	2.0	2.1	6.6	30.2
Multi-Sector	104.2	0.0	0.4	0.4	0.2	1.9	0.2	0.1	0.4	0.4	0.2	108.6
<b>Incremental Subtotal</b>	<b>495.0</b>	<b>8.8</b>	<b>37.5</b>	<b>36.0</b>	<b>26.1</b>	<b>25.3</b>	<b>34.3</b>	<b>31.3</b>	<b>44.5</b>	<b>50.0</b>	<b>76.0</b>	<b>864.9</b>
<b>Load Reductions from Improved Building Codes:</b>												
Residential	111.6	8.3	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.6
Commercial	43.4	4.1	4.3	4.2	3.9	0.0	0.0	0.0	0.0	0.0	0.0	59.9
<b>Incremental Subtotal</b>	<b>155.0</b>	<b>12.4</b>	<b>13.0</b>	<b>4.2</b>	<b>3.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>188.5</b>
Market Transformation	9.0	7.5	15.5	20.8	16.6	15.4	15.9	23.0	22.6	13.0	14.6	174.1
<b>Incremental Total with Load Reductions and Market Transformation</b>												
	<b>659.0</b>	<b>28.8</b>	<b>66.0</b>	<b>61.1</b>	<b>46.6</b>	<b>40.7</b>	<b>50.2</b>	<b>54.3</b>	<b>67.1</b>	<b>63.1</b>	<b>90.6</b>	<b>1227.5</b>
<b>CO<sub>2</sub> Reduction (tonnes)</b>	2,261,341		226,436	209,567	159,885	139,768	172,270	186,456	230,390	216,360	310,872	4,212,006

## CARBON DIOXIDE REDUCTION FROM CONSERVATION

For any given amount of conservation, there is a reduction in CO<sub>2</sub> (carbon dioxide) emissions corresponding to the generation resource mix in the region.<sup>6</sup> For FY 2010, the conservation savings of 90.6 aMW reduces annual CO<sub>2</sub> emissions by over 310,000 tonnes (metric tons). This is equivalent to having approximately 60,000 fewer automobiles on the road. For the period FY 1982-2010, the cumulative conservation savings of 1,227 aMW reduces annual CO<sub>2</sub> emissions by over 4.2 million tonnes. This is equivalent to having approximately 814,000 fewer automobiles on the road.

<sup>4</sup> Expired measures are not included as they are no longer delivering savings.

<sup>5</sup> The market transformation savings contained in Table A reflects the approximately 50 percent level of funding that BPA provided to the Northwest Energy Efficiency Alliance (NEEA). A small amount of the market transformation savings funded by BPA (associated with building codes and other market transformation efforts) may have occurred outside of BPA's service territory.

<sup>6</sup> 3,604 tonnes of CO<sub>2</sub> emissions are avoided for every 1 aMW of conservation savings.

## NON-PROGRAMMATIC CONSERVATION SAVINGS

The RED Book documents programmatic conservation savings. However, savings can also occur in another category known as non-programmatic (formerly referred to as naturally occurring) conservation. Non-programmatic savings can occur as a result of state/federal tax credits, state/national codes and appliance standards, unmeasured effects of programmatic conservation and/or the adoption of efficient technologies by non-participants in utility programs or for reasons beyond energy efficiency, such as aesthetics, productivity and special features.

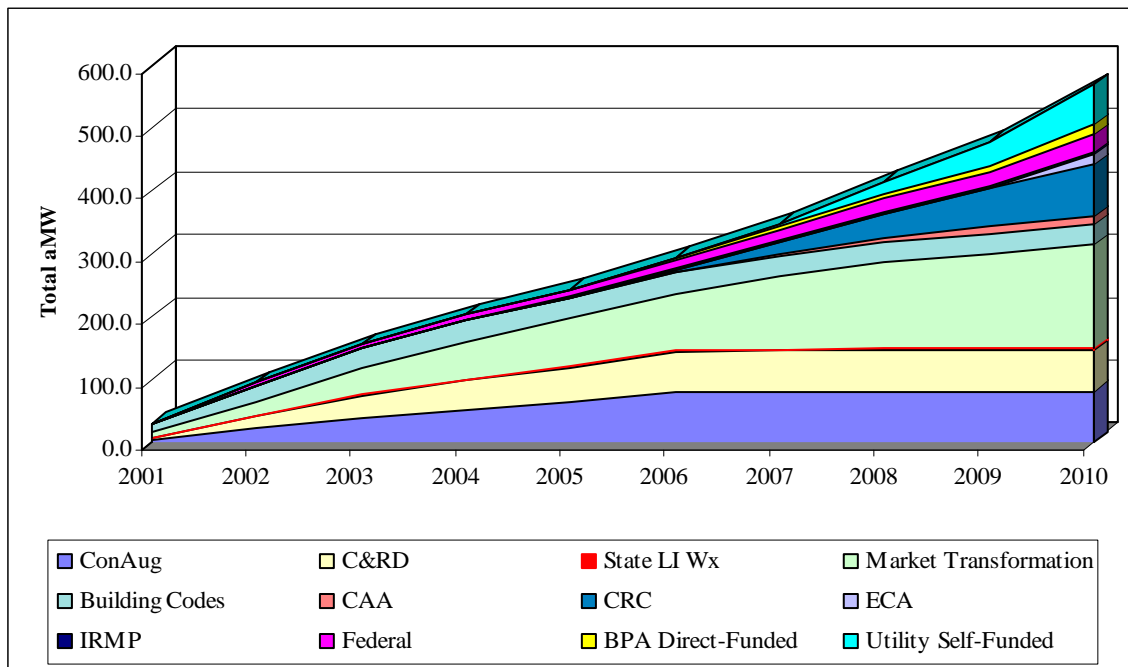
A recent analysis examined BPA's share of the Northwest region's non-programmatic savings for the 2005-2009 planning period. The analysis focused on the savings from conservation measures in three categories: compact florescent lighting (CFL), nonresidential lighting, and codes and standards. These measures were selected because corresponding energy savings were significant and reliable data were available to estimate the savings. The results of the analysis, indicating BPA's shares of non-programmatic savings from these measures, are summarized below.

<b>BPA's Non-Programmatic Savings (aMW)</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>Total FY 05-09</b>
CFLs	0.0	0.9	5.4	11.5	8.5	26.3
Non-Res Lighting	2.5	2.5	2.5	2.5	2.5	12.6
Standards (Clothes Washers)	1.0	1.3	1.4	1.7	2.0	7.4
Building Codes	0.7	0.9	0.9	0.9	1.0	4.4
<b>Total Non-Programmatic Conservation</b>	<b>4.2</b>	<b>5.6</b>	<b>10.2</b>	<b>16.6</b>	<b>14.1</b>	<b>50.7</b>

## CONSERVATION PROGRAMS OVER THE PAST 10 YEARS

Figure 3 illustrates the cumulative effect of the post-2000 conservation programs.

**FIGURE 3: Conservation Programs – Cumulative Savings (aMW), FY 2001-2010**



In FY 2001 BPA offered new conservation programs to utility customers under the Conservation Augmentation (ConAug) and the Conservation & Renewables Discount (C&RD) programs.<sup>7</sup> Two other new programs begun that year were a Federal program for federal facilities, and the State Low-Income Weatherization program funded by BPA for the states of Oregon, Washington, Idaho and Montana. Market Transformation continued to be a viable energy savings opportunity for the region. There were building code savings through FY 2004 that accounted for savings within the region (BPA only reports savings that were achieved primarily within its service territory). The FY 2002-2010 data also include conservation savings as a result of the Irrigation Rate Mitigation Product (IRMP).

In FY 2006 BPA began the transition from ConAug and C&RD to new conservation opportunities under Conservation Acquisition Agreements (CAA) and Conservation Rate Credit (CRC) initiatives. In FY 2007, BPA began various direct-funded initiatives such as compact fluorescent lightbulbs (CFLs) and grocery stores (Energy Smart Grocer). Also in FY 2007, utility self-funding for credit toward the conservation adjustment to the Contract High Water Mark credit began as a new funding category of savings. Credit toward the conservation adjustment stopped at the end of FY 2010; however, utility self-funding of savings continued after FY 2010. In FY 2010, BPA began the transition from CAA to the Energy Conservation Agreement (ECA).

<sup>7</sup> Early acceptance by a few utilities provided energy savings for those programs in the summer of 2001 prior to the programs' official start in FY 2002.

The total cumulative savings shown in Figure 3 for the period FY 2001-2010 are 568.5 aMW. These cumulative savings break out as follows:

ConAug	80.3 aMW
C&RD	65.0 aMW
State Low-Income Weatherization program	3.1 aMW
Market Transformation	165.1 aMW
Building Codes	33.5 aMW
CAA	11.2 aMW
CRC	83.0 aMW
ECA	15.9 aMW
IRMP	3.8 aMW
Federal	28.3 aMW
BPA direct-funded	15.5 aMW
Utility self-funded	63.8 aMW

Figure 4 depicts annual energy savings attained by the conservation programs for FY 2001 through FY 2010.

**FIGURE 4: Conservation Programs – Annual Incremental Savings (aMW), FY 2001-2010**

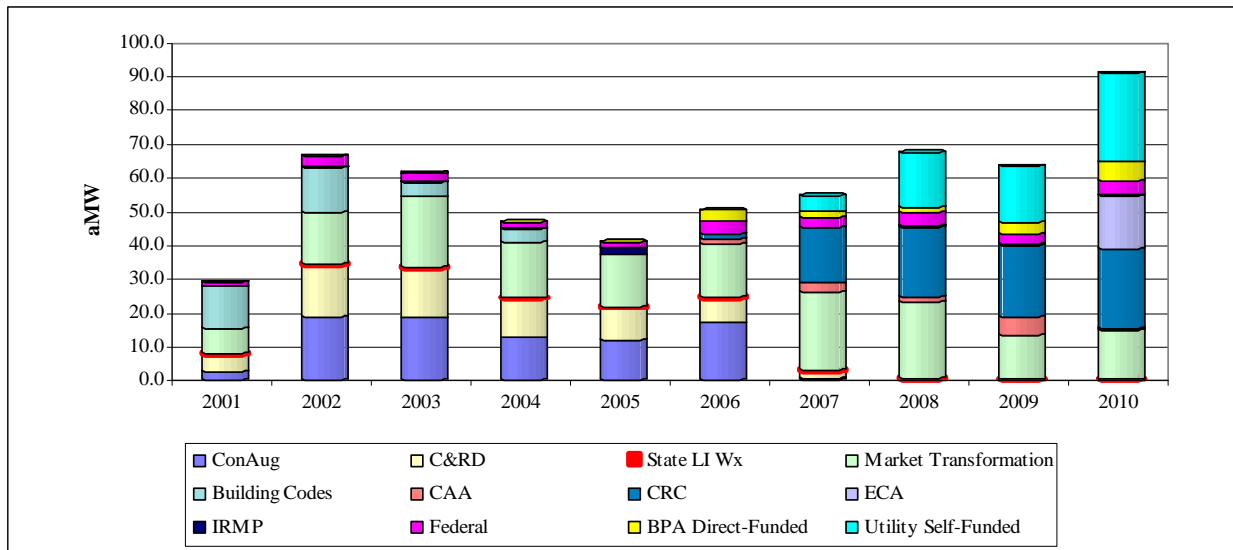


Figure 5 shows the annual acquisitions within each market sector.

**FIGURE 5: Conservation by Sector – Annual Incremental Savings (aMW), FY 2001-2010**

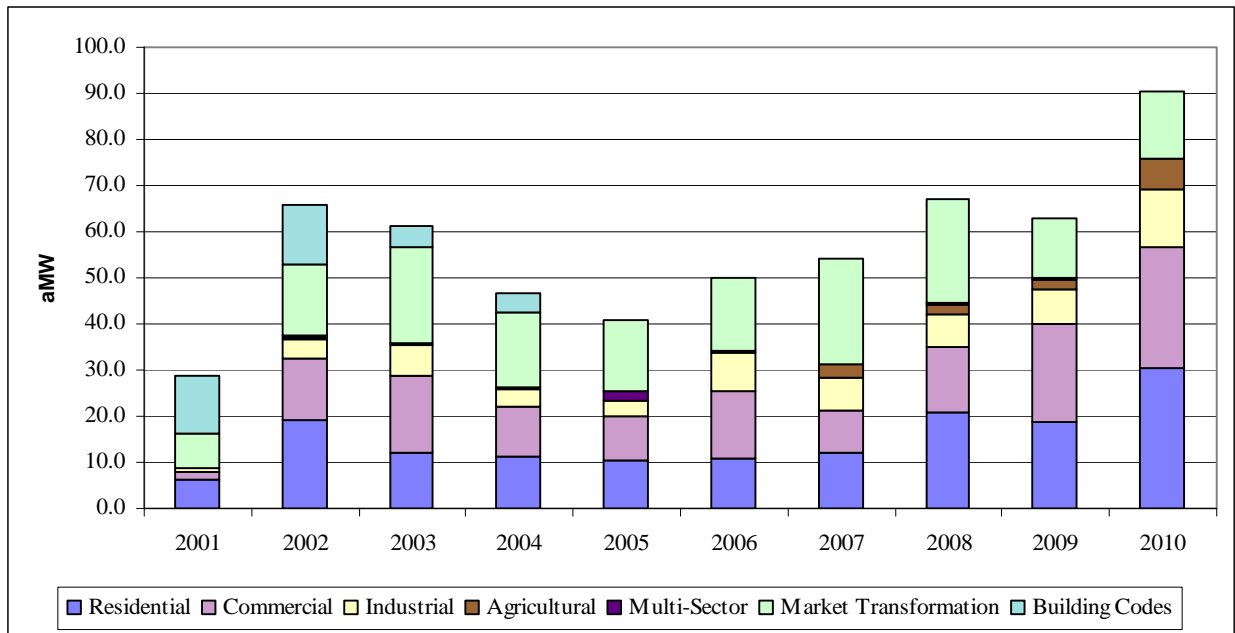


Table B provides information on total incremental energy savings for FY 2001 through 2010. Beginning with the 2007 edition of the RED book, Table B had a new format that no longer showed an adjustment column. All adjustments are now reflected in the data for the years to which they apply. Revisions to the savings occur on an annual basis and are a result of evaluations performed, expired measures or revised reports submitted by utilities for previous years.

**TABLE B: BPA's Annual Conservation Savings (aMW) By Program, FY 2001-2010**

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	TOTAL FY 01-10
<b>RESIDENTIAL</b>											
Low Income Residential Weatherization (States)	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.2	3.1
C&RD Low Income Weatherization	0.0	0.2	0.2	0.2	0.2	0.1					0.8
CRC Low Income Weatherization						0.3	0.0	0.4	0.3	0.5	1.5
Conservation Augmentation (ConAug)	2.0	5.8	2.4	1.8	1.7	1.9	0.0	0.0	0.0	0.0	15.6
Conservation Renewable Discount (C&RD)	3.6	12.8	9.0	8.7	8.3	3.9					46.2
Conservation Acquisition (CAA)						0.2	0.3	0.2	1.9	0.0	2.7
Conservation Rate Credit (CRC)						0.7	7.0	10.4	8.2	10.3	36.7
Energy Conservation Agreement (ECA)									0.0	8.3	8.4
BPA Direct Funded Initiatives						3.4	1.6	1.0	0.6	0.6	7.2
Utility Self-Funded (High Water Mark)							2.7	8.6	7.6	10.6	29.5
<b>RESIDENTIAL TOTAL</b>	<b>6.0</b>	<b>19.0</b>	<b>11.9</b>	<b>11.0</b>	<b>10.5</b>	<b>10.7</b>	<b>12.0</b>	<b>20.9</b>	<b>18.9</b>	<b>30.6</b>	<b>151.6</b>
<b>COMMERCIAL</b>											
Conservation Augmentation (ConAug)	0.5	9.4	10.8	8.4	7.2	9.5	0.2	0.0	0.0	0.0	45.9
Conservation Renewable Discount (C&RD)	0.3	1.1	3.3	0.6	0.4	0.6					6.4
Conservation Acquisition (CAA)						0.6	1.8	0.6	1.2	0.2	4.4
Conservation Rate Credit (CRC)						0.2	3.3	5.0	6.9	5.5	20.9
Energy Conservation Agreement (ECA)										2.9	2.9
BPA Direct Funded Initiatives			0.1	0.0			0.0	0.4	2.5	5.0	8.1
Federal	1.2	3.1	2.5	1.9	1.9	3.7	3.0	4.1	3.0	4.1	28.3
Utility Self-Funded (High Water Mark)							1.3	4.0	7.4	8.6	21.2
<b>COMMERCIAL TOTAL</b>	<b>2.0</b>	<b>13.6</b>	<b>16.7</b>	<b>10.9</b>	<b>9.5</b>	<b>14.6</b>	<b>9.5</b>	<b>14.0</b>	<b>21.0</b>	<b>26.2</b>	<b>138.0</b>
<b>INDUSTRIAL</b>											
Conservation Augmentation (ConAug)	0.0	3.2	5.0	2.2	2.8	5.3	0.0	0.0			18.6
Conservation Renewable Discount (C&RD)	0.4	0.8	1.7	1.6	0.6	2.6	2.2				9.9
Conservation Acquisition (CAA)						0.3	0.6	0.5	0.7		2.2
Conservation Rate Credit (CRC)							3.2	3.3	5.1	5.7	17.3
Energy Conservation Agreement (ECA)										3.4	3.4
BPA Direct Funded Initiatives								0.0	0.0	0.1	0.1
Utility Self-Funded (High Water Mark)							0.7	3.4	1.7	3.1	8.9
<b>INDUSTRIAL TOTAL</b>	<b>0.5</b>	<b>4.0</b>	<b>6.7</b>	<b>3.8</b>	<b>3.4</b>	<b>8.2</b>	<b>6.8</b>	<b>7.1</b>	<b>7.6</b>	<b>12.4</b>	<b>60.5</b>

**TABLE B (aMW), continued**

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	TOTAL FY 01-10
<b>Agricultural</b>											
Conservation Augmentation (ConAug)		0.0	0.0			0.1	0.1				0.2
Conservation Renewable Discount (C&RD)	0.3	0.4	0.3	0.2	0.1	0.0					1.3
Conservation Acquisition Agreements (CAA)						0.2	0.1	0.1	1.4	0.2	2.0
Conservation Rate Credit (CRC)						0.1	2.9	1.7	0.6	1.3	6.7
Energy Conservation Agreement (ECA)									0.0	1.2	1.2
BPA Direct Funded Initiatives									0.0	0.0	0.0
Utility Self-Funded (High Water Mark)							0.0	0.2	0.0	3.9	4.1
<b>AGRICULTURAL TOTAL</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.2</b>	<b>0.1</b>	<b>0.5</b>	<b>3.0</b>	<b>2.0</b>	<b>2.1</b>	<b>6.6</b>	<b>15.4</b>
<b>Multi-Sector</b>											
Conservation Renewable Discount (C&RD)	0.0	0.2	0.2	0.1	0.0	0.0					0.5
Irrigation Rate Mitigation Product (IRMP)		0.3	0.2	0.2	1.9	0.2	0.1	0.4	0.4	0.2	3.8
<b>MULTI-SECTOR SUBTOTAL</b>	<b>0.0</b>	<b>0.4</b>	<b>0.4</b>	<b>0.2</b>	<b>1.9</b>	<b>0.2</b>	<b>0.1</b>	<b>0.4</b>	<b>0.4</b>	<b>0.2</b>	<b>4.3</b>
<b>Market Transformation</b>											
BPA Direct-Funded	7.5	12.9	17.2	15.1	13.6	14.6	18.5	19.2	10.8	10.1	139.6
Conservation Renewable Discount (C&RD)	0.0	2.6	3.6	1.5	1.8	0.6					10.1
Conservation Rate Credit (CRC)						0.8	3.0	1.5	0.8	1.1	7.1
Utility Self-Funded (High Water Mark)							1.5	2.0	1.4	3.4	8.3
<b>MARKET TRANSFORMATION SUBTOTAL</b>	<b>7.6</b>	<b>15.5</b>	<b>20.8</b>	<b>16.6</b>	<b>15.4</b>	<b>15.9</b>	<b>23.0</b>	<b>22.6</b>	<b>13.0</b>	<b>14.6</b>	<b>165.1</b>
<b>TOTAL CONAUG</b>	<b>2.5</b>	<b>18.4</b>	<b>18.2</b>	<b>12.4</b>	<b>11.7</b>	<b>16.8</b>	<b>0.3</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>80.3</b>
<b>TOTAL C&amp;RD</b>	<b>4.7</b>	<b>18.0</b>	<b>18.2</b>	<b>12.9</b>	<b>11.3</b>	<b>7.7</b>	<b>2.2</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>75.1</b>
<b>TOTAL CAA</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.3</b>	<b>2.8</b>	<b>1.4</b>	<b>5.3</b>	<b>0.4</b>	<b>11.2</b>
<b>TOTAL CRC</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.1</b>	<b>19.3</b>	<b>22.2</b>	<b>22.0</b>	<b>24.4</b>	<b>90.1</b>
<b>TOTAL ECA</b>									<b>0.0</b>	<b>15.8</b>	<b>15.9</b>
<b>TOTAL BPA DIRECT-FUNDED</b>	<b>7.5</b>	<b>12.9</b>	<b>17.4</b>	<b>15.1</b>	<b>13.6</b>	<b>18.0</b>	<b>20.2</b>	<b>20.6</b>	<b>13.9</b>	<b>15.9</b>	<b>155.1</b>
<b>TOTAL UTILITY SELF-FUNDED (HIGH WATER MARK)</b>							<b>6.2</b>	<b>18.1</b>	<b>18.2</b>	<b>29.6</b>	<b>72.1</b>
<b>BUILDING CODES</b>											
Residential	8.3	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0
Commercial	4.1	4.3	4.2	3.9	0.0	0.0	0.0	0.0	0.0	0.0	16.5
<b>BUILDING CODES TOTAL</b>	<b>12.4</b>	<b>13.0</b>	<b>4.2</b>	<b>3.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>33.5</b>
<b>TOTAL POST LEGACY CONSERVATION</b>	<b>28.8</b>	<b>66.0</b>	<b>61.1</b>	<b>46.6</b>	<b>40.7</b>	<b>50.2</b>	<b>54.3</b>	<b>67.1</b>	<b>63.1</b>	<b>90.6</b>	<b>568.5</b>

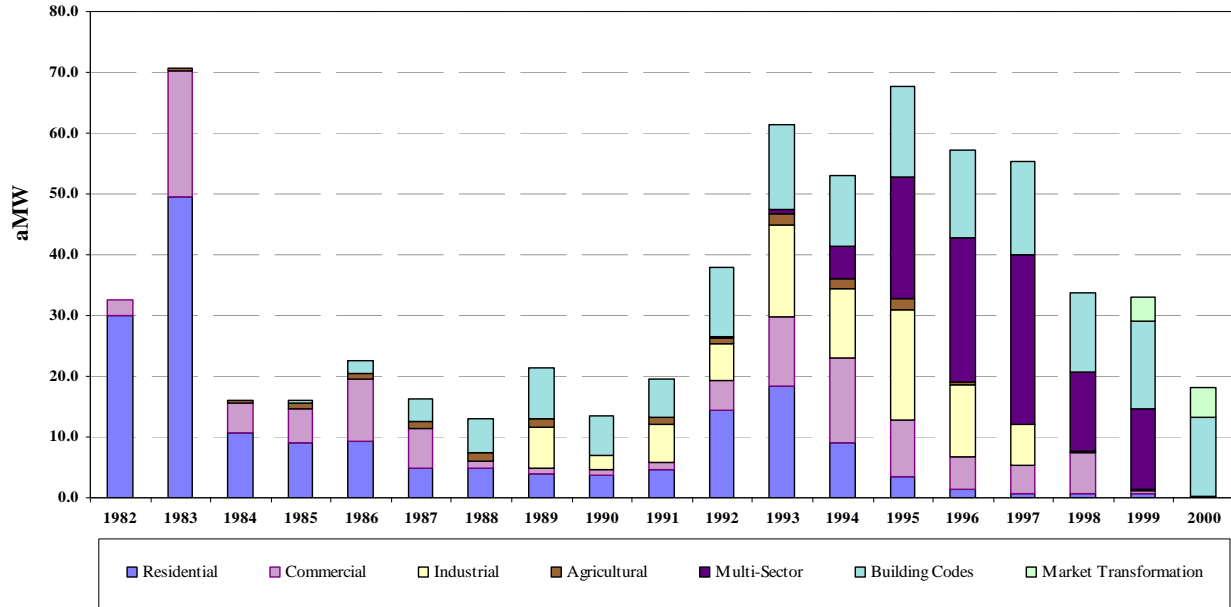
**NOTES FOR TABLE B**

- In FY 2007, a new funding category began – utility self-funded.
- The Energy Smart Grocer initiative can be funded through CRC, CAA, BPA direct-funded, or utility self-funded.
- IRMP is located under multi-sector, as many of the measures are not necessarily agricultural in nature.
- The C&RD savings shown in FY 2007 for the industrial sector were for the completion of a single, large industrial project funded in FY 2006, the final year of the C&RD program.
- Under the commercial sector's BPA direct-funded initiatives, the initiatives include the Institutional Building Program, grocery, computer savings (Energy Star 4, Energy Star 5, 80 Plus), CFL's, rooftop unit HVAC and turnkey lighting.
- Multi-sector is a "pseudo sector" that makes no sector distinction for the savings achieved.

# BPA'S HISTORICAL CONSERVATION SAVINGS FY 1982-FY 2000

Figure 6 shows the annual acquisitions within each market sector for the historical period of FY 1982-2000.

**FIGURE 6: Historical Conservation Savings (aMW), FY 1982-2000**



## NOTES FOR FIGURE 6

- The savings from expired measures are excluded from Figure 6.
- Multi-sector is a “pseudo sector” that makes no sector distinction for the savings achieved.



Figure 7 shows those measures that have expired and that are not included in the preceding figures and tables.

**FIGURE 7: Expired Historical Conservation Savings, Shown by Year of Installation**  
**Cumulative Total Expired Savings = 121.8 aMW**

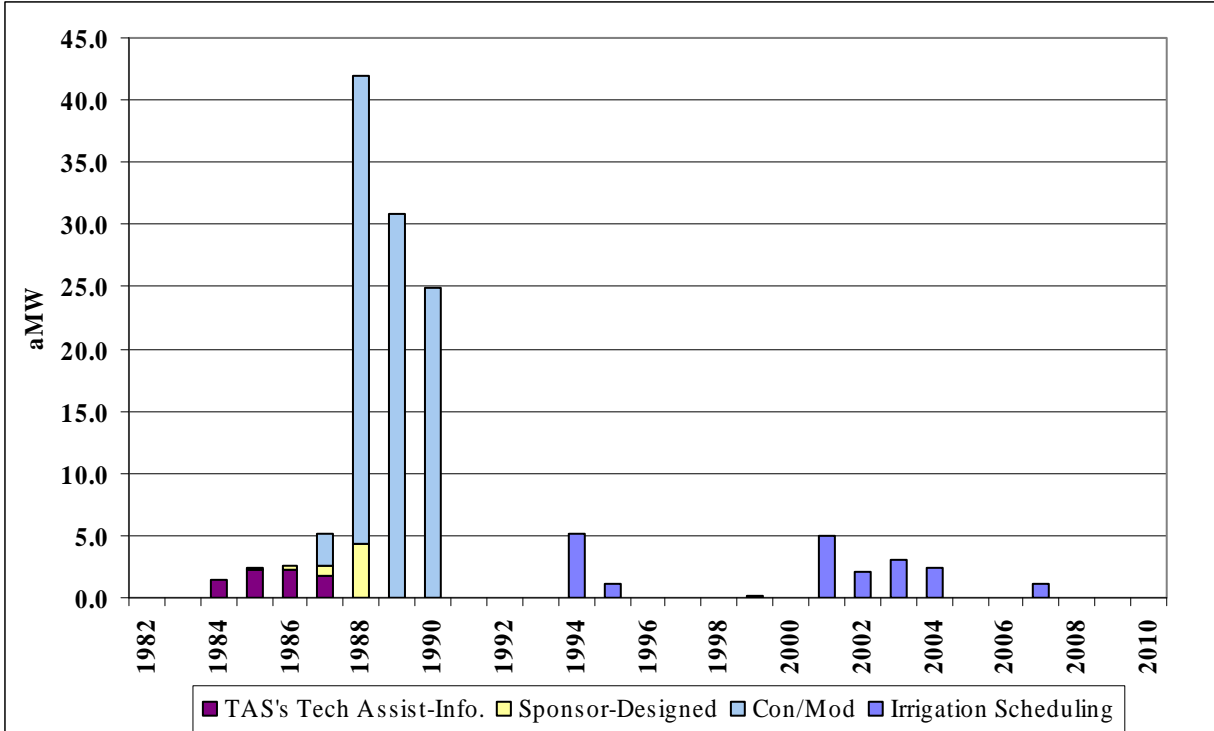


Table C provides information on historical programs for the period FY 1982 through 2000. Total cumulative energy savings achieved during this time period are 660 aMW.

**TABLE C: BPA's Historical Conservation Savings (aMW), FY 1982-2000**

	Total FY 82-94	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	SubTotal FY 82-00	Adjustment FY 82-00	Total FY 82-00
<b>RESIDENTIAL</b>										
EXISTING:										
Weatherization-SF&MF	99.4	1.4	0.0	0.0	0.0	0.0	0.0	100.8	0.0	100.8
Weatherization-MH	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Low-Income Wx	0.0	0.0	0.5	0.3	0.4	0.6	0.3	2.1	0.0	2.1
NEW										
Super Good Cents	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	4.8
New Manuf. Homes	1.9	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.9
L/T Super Good Cents	1.9	0.5	0.4	0.2	0.2	0.0	0.0	3.2	0.0	3.2
Manuf. Hsg. Acq.(MAP)	6.3	1.1	0.4	0.0	0.0	0.0	0.0	7.8	0.0	7.8
Water Heater Wraps	30.4	0.0	0.0	0.0	0.0	0.0	0.0	30.4	0.0	30.4
Shower Flow Restrictors	9.1	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	9.1
Waterheat/sh-hds/aerators	18.7	0.4	0.1	0.1	0.1	0.0	0.0	19.4	0.0	19.4
<b>RES. SUBTOTAL</b>	<b>172.6</b>	<b>3.4</b>	<b>1.4</b>	<b>0.6</b>	<b>0.7</b>	<b>0.6</b>	<b>0.3</b>	<b>179.7</b>	<b>0.0</b>	<b>179.7</b>
<b>COMMERCIAL</b>										
LTNG. & WTR. HTNG.:										
Water Heater Wraps	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Shower Flow Restrictors	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Lamps	1.7	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	1.7
Street & Area Lighting	16.9	0.0	0.0	0.0	0.0	0.0	0.0	16.9	0.0	16.9
INSTITUTIONAL BLDG.										
TAS's Tech Assist-Info.	7.6	0.0	0.0	0.0	0.0	0.0	0.0	7.6	(7.6)	0.0
ECM's	26.7	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	26.7
ACQUISITION SUPPORT										
Purch. of Energy Svngs.	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3
Finance (CIPP)	3.2	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	3.2
PSP&L	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.6
PECI - Comm/Ind Ltng.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4
CREUS End-use Study	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Energy Smart Design	28.5	8.0	4.6	2.1	2.2	0.1	0	45.5	0.0	45.5
Targeted Acq. (TAP)	3.0	0.5	0.5	2.7	4.6	0.4	0	11.7	0.0	11.7
ODOE - Schools	0.1	0.8	0.2	0.0	0.0	0.0	0.0	1.1	0.0	1.1
<b>COM. SUBTOTAL</b>	<b>92.5</b>	<b>9.3</b>	<b>5.3</b>	<b>4.8</b>	<b>6.8</b>	<b>0.5</b>	<b>0.0</b>	<b>119.2</b>	<b>(7.6)</b>	<b>111.6</b>
<b>INDUSTRIAL</b>										
Sponsor-Designed	9.7	0.0	0.0	0.0	0.0	0.0	0.0	9.7	(5.6)	4.1
Energy Savings Plan	31.3	16.9	9.8	3.6	0.2	0.0	0.0	61.8	0.0	61.8
Major Plants	12.4	1.3	2.0	3.1	0.0	0.2	0.0	19.0	0.0	19.0
<b>IND. SUBTOTAL</b>	<b>53.4</b>	<b>18.2</b>	<b>11.8</b>	<b>6.7</b>	<b>0.2</b>	<b>0.2</b>	<b>0.0</b>	<b>90.5</b>	<b>(5.6)</b>	<b>84.9</b>
<b>AGRICULTURAL</b>										
Irrigation Hardware	12.4	1.8	0.6	0.0	0.0	0.0	0.0	14.8	0.0	14.8
Irrigation Scheduling	5.2	1.2	0.0	0.0	0.0	0.2	0.0	6.6	(6.6)	0.0
<b>AG. SUBTOTAL</b>	<b>17.6</b>	<b>3.0</b>	<b>0.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.0</b>	<b>21.4</b>	<b>(6.6)</b>	<b>14.8</b>

**TABLE C (aMW), continued**

	Total FY 82-94	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	TOTAL FY 82-00	Adjustment FY 82-00	Total FY 82-00
<b>MULTI-SECTOR</b>										
Billing Credits	1.0	0.5	0.6	0.3	0.0	0.0	0.0	2.4	0.0	2.4
Competitive Acquisition	0.1	0.6	0.0	0.1	0.1	1.1	0.0	2.0	0.0	2.0
BPA Sys Efficiencies	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7
Third-Party Financing	4.9	10.3	12.4	18.1	6.8	4.8	0.0	57.3	0.0	57.3
Flex Agreements	0.0	8.3	10.6	9.4	6.0	7.5	0.0	41.8	0.0	41.8
<b>MULTI-S. SUBTOTAL</b>	<b>6.3</b>	<b>20.1</b>	<b>23.6</b>	<b>27.9</b>	<b>12.9</b>	<b>13.4</b>	<b>0.0</b>	<b>104.2</b>	<b>0.0</b>	<b>104.2</b>
<b>SECTOR</b>										
<b>SUBTOTALS</b>	<b>342.4</b>	<b>54.0</b>	<b>42.7</b>	<b>40.0</b>	<b>20.6</b>	<b>14.9</b>	<b>0.3</b>	<b>515.0</b>	<b>(19.8)</b>	<b>495.2</b>
Con/Mod	95.9	-	-	-	-	-	-	95.9	(95.9)	0.0
<b>SUBTOTAL</b>	<b>438.3</b>	<b>54.0</b>	<b>42.7</b>	<b>40.0</b>	<b>20.6</b>	<b>14.9</b>	<b>0.3</b>	<b>610.9</b>	<b>(115.7)</b>	<b>495.2</b>
<b>LOAD REDUCTION FROM BLDG. CODES</b>										
Residential	59.0	10.3	8.7	8.8	8.2	8.2	8.4	111.6	0.0	111.6
Commercial	10.8	4.6	5.9	6.5	4.9	6.2	4.5	43.4	0.0	43.4
<b>Improved Bld Codes</b>	<b>69.8</b>	<b>14.9</b>	<b>14.6</b>	<b>15.3</b>	<b>13.1</b>	<b>14.4</b>	<b>12.9</b>	<b>155.0</b>	<b>0.0</b>	<b>155.0</b>
<b>Market Transformation</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>4.0</b>	<b>5.0</b>	<b>9.0</b>	<b>0.0</b>	<b>9.0</b>
<b>TOTAL HISTORICAL</b>										
<b>CONSERVATION</b>	<b>508.1</b>	<b>68.9</b>	<b>57.3</b>	<b>55.3</b>	<b>33.7</b>	<b>33.3</b>	<b>18.2</b>	<b>774.9</b>	<b>(115.7)</b>	<b>659.2</b>

**NOTES ON TABLE C**

- **ADJUSTED SAVINGS:** The adjusted savings reflect, in some cases, the end of a measure’s life when BPA assumes the measures are no longer producing savings. In addition, the adjusted savings may reflect findings from evaluations that show savings are more or less than expected when the program was initiated or reflect revised reports submitted by utilities.
- **FUEL CHOICE:**<sup>8</sup> In 1993, BPA analyzed the following programs for possible fuel switching effects: Residential Weatherization, Manufactured Housing Acquisition Program (MAP), New Residential, Energy Smart Design (ESD) and Water Heating. These analyses concluded that the Residential Weatherization program had no fuel choice effect and only a modest effect occurred in the Water Heating program. However, a fuel choice effect was found in the New Residential sector and MAP. This analysis concluded that the 1993 new residential program incentives from Long-Term Super Good Cents (LTSGC), Super Good Cents (SGC), Washington State Energy Code and/or Northwest Energy Code, and the MAP program did affect fuel choice. The report states that the incentives paid to build energy efficient electrically heated homes throughout the region appear to be causing approximately 8 percent of the certified LTSGC homes and 6 percent of the new manufactured homes to be built using electricity when, absent the incentives, natural gas would have been the preferred fuel. The fuel choice impacts noted in the report are the result of builders responding to the available incentives from all the programs in their area.

In the commercial sector, a similar fuel choice impact was found in the ESD program when analysis concluded that incentives did affect fuel choice decisions for HVAC equipment and water heating units. The incentives resulted in unintended fuel choice effects that accounted for 3 percent of the program savings occurring because the participants selected electricity instead of natural gas. The above fuel choice effects are incorporated into the program savings for LTSGC, MAP and ESD.

<sup>8</sup> Fuel choice effects occur when a consumer decides to change fuel sources from what would have been done absent the program. Of concern here is a decision to stay with electricity due to the increased efficiency when the consumer may have decided to use natural gas or another fuel instead.

## TOTAL BPA CONSERVATION COSTS

### TABLES D & E – Conservation Costs

From FY 1982 - 2010, BPA spent approximately \$2.478 billion on conservation measures.

Residential	\$1,230 million
Commercial	\$ 479 million
Industrial	\$ 166 million <sup>9</sup>
Agricultural	\$ 43 million
Multi-sector acquisitions	\$ 159 million
Market transformation, conservation support, other costs and federal reimbursable revenues	\$ 401 million

The costs in these tables are “accrued” expenditures – the amount invoiced in a given year. The expenditures reported have been “loaded” to include all direct costs (measure, installation, administrative and program evaluation costs) related to conservation, and indirect costs associated with BPA’s energy efficiency program (load forecasting, planning and economic analysis). The costs reported in the tables do not include interest expense on conservation borrowing.

BPA’s historical conservation costs have not always been reported consistently from year to year. Prior to 1988, costs were allocated to specific sectors and to resource planning. Starting in 1988, some resource planning costs were allocated to specific sectors. In addition, two new cost categories were created: multi-sector acquisitions and miscellaneous costs. (Miscellaneous costs have been replaced with other support cost categories.)

Although this change in categories makes it difficult to do a year-by-year comparison of sector costs, the change more accurately reflects expenditures. Multi-sector acquisitions cover more than one sector and include costs for billing credits, competitive acquisitions, and financial and technical assistance programs. Program and support costs are not sector specific and consist of resource planning costs and various overhead costs associated with conservation activity through FY 1986. In FY 1995 BPA was reorganized and also implemented a new accounting system. This resulted in some changes in how costs were accounted for and reported. Program and support costs shown in FY 1996 are costs related to the new Energy Efficiency organization. Every attempt was made to allocate costs to the correct categories.

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<sup>9</sup> Excludes \$48 million for ConMod measures now expired.

**TABLE D-1: BPA's Total Conservation Costs, FY 1982-2010 (\$ 000)**

	1982-2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals	
<b>RESIDENTIAL:</b>													
State Low Income Weatherization	\$	3,103	\$ 2,429	\$ 3,745	\$ 2,475	\$ 3,817	\$ 4,029	\$ 4,188	\$ 4,135	\$ 6,569	\$ 4,735	\$ 39,225	
C&RD Low Income Weatherization	\$	70	\$ 1,379	\$ 1,321	\$ 1,197	\$ 990	\$ 254					\$ 5,211	
CRC Low Income Weatherization						\$ 411	\$ 1,735	\$ 2,076	\$ 1,675	\$ 2,045		\$ 7,942	
Conservation Augmentation	\$	41	\$ 8,709	\$ 2,921	\$ 2,927	\$ 2,349	\$ 2,036	\$ 536				\$ 19,519	
Conservation & Renewables Discount	\$	6,237	\$ 24,063	\$ 18,990	\$ 16,577	\$ 14,902	\$ 5,966	\$ -	\$ -			\$ 86,735	
Conservation Acquisition	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 195	\$ 517	\$ 234	\$ 3,137	\$ 124	\$ 4,207	
Conservation Rate Credit	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 1,466	\$ 11,770	\$ 10,636	\$ 7,700	\$ 10,492	\$ 42,064	
Energy Conservation Agreement							\$ -	\$ -	\$ -	\$ 58	\$ 14,016	\$ 14,074	
BPA Direct Funded Initiatives	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 731	\$ 881	\$ 1,225	\$ 954	\$ 1,161	\$ 4,952	
<b>Residential Totals</b>	<b>\$</b>	<b>1,006,407</b>	<b>\$ 9,451</b>	<b>\$ 36,580</b>	<b>\$ 26,977</b>	<b>\$ 23,176</b>	<b>\$ 22,058</b>	<b>\$ 15,088</b>	<b>\$ 19,627</b>	<b>\$ 18,306</b>	<b>\$ 20,093</b>	<b>\$ 32,573</b>	<b>\$ 1,230,336</b>
<b>COMMERCIAL:</b>													
Conservation Augmentation	\$	8	\$ 13,255	\$ 12,151	\$ 11,937	\$ 8,659	\$ 6,298	\$ 3,077				\$ 55,385	
Conservation & Renewables Discount	\$	695	\$ 2,534	\$ 5,850	\$ 1,565	\$ 920	\$ 1,435	\$ -				\$ 12,999	
Conservation Acquisition	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 692	\$ 1,870	\$ 440	\$ 1,398	\$ 197	\$ 4,597	
Conservation Rate Credit	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 272	\$ 4,651	\$ 4,293	\$ 5,818	\$ 4,302	\$ 19,336	
Energy Conservation Agreement							\$ -	\$ -	\$ -	\$ -	\$ 4,648	\$ 4,648	
BPA Direct Funded Initiatives	\$	-	\$ -	\$ 88	\$ 6	\$ -	\$ -	\$ 32	\$ 415	\$ 2,218	\$ 5,681	\$ 8,440	
Federal	\$	4	\$ 1,374	\$ 2,365	\$ 1,608	\$ 857	\$ 1,161	\$ 2,033	\$ 5,986	\$ 7,812	\$ 11,733	\$ 34,933	
<b>Commercial Totals</b>	<b>\$</b>	<b>338,550</b>	<b>\$ 707</b>	<b>\$ 17,163</b>	<b>\$ 20,454</b>	<b>\$ 15,116</b>	<b>\$ 10,436</b>	<b>\$ 9,858</b>	<b>\$ 11,663</b>	<b>\$ 11,134</b>	<b>\$ 17,246</b>	<b>\$ 26,561</b>	<b>\$ 478,888</b>
<b>INDUSTRIAL:</b>													
Conservation Augmentation	\$	4	\$ 4,873	\$ 5,341	\$ 2,954	\$ 2,885	\$ 3,149	\$ 137				\$ 19,343	
Conservation & Renewables Discount	\$	106	\$ 1,676	\$ 3,014	\$ 1,822	\$ 941	\$ 4,053	\$ -				\$ 11,612	
Conservation Acquisition	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 233	\$ 706	\$ 354	\$ 324	\$ -	\$ 1,617	
Conservation Rate Credit	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,942	\$ 2,836	\$ 3,858	\$ 3,405	\$ 14,041	
Energy Conservation Agreement							\$ -	\$ -	\$ -	\$ -	\$ 10,702	\$ 10,702	
BPA Direct Funded Initiatives							\$ -	\$ -	\$ -	\$ 28	\$ 101	\$ 129	
<b>Industrial Totals</b>	<b>\$</b>	<b>108,691</b>	<b>\$ 110</b>	<b>\$ 6,549</b>	<b>\$ 8,355</b>	<b>\$ 4,776</b>	<b>\$ 3,826</b>	<b>\$ 7,435</b>	<b>\$ 4,785</b>	<b>\$ 3,190</b>	<b>\$ 4,210</b>	<b>\$ 14,208</b>	<b>\$ 166,135</b>
<b>AGRICULTURAL:</b>													
Conservation Augmentation	\$	-	\$ 16	\$ 34	\$ -	\$ -	\$ 81	\$ 836				\$ 967	
Conservation & Renewables Discount	\$	1,452	\$ 953	\$ 697	\$ 518	\$ 119	\$ 85	\$ -				\$ 3,824	
Conservation Acquisition	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 172	\$ 100	\$ 109	\$ 843	\$ 602	\$ 1,826	
Conservation Rate Credit	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 164	\$ 1,541	\$ 1,692	\$ 947	\$ 980	\$ 5,324	
Energy Conservation Agreement							\$ -	\$ -	\$ -	\$ 2	\$ 1,492	\$ 1,494	
BPA Direct Funded Initiatives	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 222	\$ -	\$ -	\$ 16	\$ 29	\$ 267	
<b>Agricultural Totals</b>	<b>\$</b>	<b>28,946</b>	<b>\$ 1,452</b>	<b>\$ 969</b>	<b>\$ 731</b>	<b>\$ 518</b>	<b>\$ 119</b>	<b>\$ 724</b>	<b>\$ 2,477</b>	<b>\$ 1,801</b>	<b>\$ 1,808</b>	<b>\$ 3,103</b>	<b>\$ 42,648</b>
<b>MULTI-SECTOR:</b>													
Conservation & Renewables Discount	\$	-	\$ 290	\$ 511	\$ 175	\$ 140	\$ -	\$ -				\$ 1,116	
Irrigation Rate Mitigation Product	\$	-	\$ 121	\$ 166	\$ 92	\$ 547	\$ 267	\$ 116	\$ 409	\$ 448	\$ 292	\$ 2,458	
<b>Multi-Sector Totals</b>	<b>\$</b>	<b>155,565</b>	<b>\$ -</b>	<b>\$ 411</b>	<b>\$ 677</b>	<b>\$ 267</b>	<b>\$ 687</b>	<b>\$ 267</b>	<b>\$ 116</b>	<b>\$ 409</b>	<b>\$ 448</b>	<b>\$ 292</b>	<b>\$ 159,139</b>
<b>SUBTOTALS</b>	<b>\$</b>	<b>1,638,159</b>	<b>\$ 11,720</b>	<b>\$ 61,672</b>	<b>\$ 57,194</b>	<b>\$ 43,853</b>	<b>\$ 37,126</b>	<b>\$ 33,372</b>	<b>\$ 38,668</b>	<b>\$ 34,840</b>	<b>\$ 43,805</b>	<b>\$ 76,737</b>	<b>\$ 2,077,146</b>

**TABLE D-1, continued**

	1982-2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals												
<b>Market Transformation</b>	\$	9,603	\$	7,798	\$	9,321	\$	9,709	\$	7,956	\$	10,140	\$	10,771	\$	9,353	\$	9,631	\$	9,831	\$	94,113		
C&RD Expense (Includes Donations/Admin/IT Development)	\$	1,040	\$	7,969	\$	9,109	\$	7,988	\$	6,597	\$	4,433	\$	-	\$		\$		\$		\$	37,136		
CRC Expense (Includes Donations/Admin)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	1,182	\$	6,286	\$	4,793	\$	3,497	\$	4,189	\$	19,947		
Energy Web	\$	1,229	\$	705	\$	4,141	\$	735	\$	447	\$	498	\$	174	\$	261	\$	686	\$	1,374	\$	10,250		
<b>SUBTOTALS</b>	\$	-	\$	<b>11,872</b>	\$	<b>16,472</b>	\$	<b>22,571</b>	\$	<b>18,432</b>	\$	<b>15,000</b>	\$	<b>16,253</b>	\$	<b>17,231</b>	\$	<b>14,407</b>	\$	<b>13,814</b>	\$	<b>15,394</b>	\$	<b>161,446</b>
<b>CONSERVATION SUPPORT COSTS:</b>																								
PBL Conservation Sales Support	\$	-	\$	4,517	\$	787	\$	360	\$	794	\$	831	\$	669	\$	-	\$	-	\$	-	\$	-	\$	7,958
Conservation Staff Expense	\$	4,874	\$	5,570	\$	5,742	\$	5,921	\$	6,456	\$	6,840	\$	6,388	\$	7,059	\$	7,845	\$	7,256	\$	7,256	\$	63,951
Conservation Support Expense	\$	753	\$	4,518	\$	2,046	\$	1,858	\$	1,057	\$	539	\$	2,496	\$	4,922	\$	7,405	\$	9,962	\$	9,962	\$	35,556
<b>SUBTOTALS</b>	\$	<b>178,113</b>	\$	<b>10,144</b>	\$	<b>10,875</b>	\$	<b>8,148</b>	\$	<b>8,573</b>	\$	<b>8,344</b>	\$	<b>8,048</b>	\$	<b>8,884</b>	\$	<b>11,981</b>	\$	<b>15,250</b>	\$	<b>17,218</b>	\$	<b>285,578</b>
<b>OTHER COSTS:<sup>3</sup></b>																								
Third Party Financing Costs	\$	79,519	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	79,519
Debt Service Payment Adjustments	\$	(71,508)	\$	(5,574)	\$	(4,081)	\$	(4,236)	\$	(5,275)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	(90,674)
Various Costs Adjustments	\$	(31,748)	\$	-	\$	-	\$	(3,371)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	(35,119)
Federal Reimbursable Program Costs <sup>1</sup>	\$	-	\$	6,979	\$	10,053	\$	9,074	\$	8,266	\$	14,093	\$	17,233	\$	17,172	\$	11,205	\$	10,212	\$	15,128	\$	119,415
<b>SUBTOTALS</b>	\$	<b>(23,737)</b>	\$	<b>1,405</b>	\$	<b>5,972</b>	\$	<b>1,467</b>	\$	<b>2,991</b>	\$	<b>14,093</b>	\$	<b>17,233</b>	\$	<b>17,172</b>	\$	<b>11,205</b>	\$	<b>10,212</b>	\$	<b>15,128</b>	\$	<b>73,141</b>
<b>Total Incremental Costs<sup>2</sup></b>	\$	<b>35,141</b>	\$	<b>94,991</b>	\$	<b>89,380</b>	\$	<b>73,849</b>	\$	<b>74,563</b>	\$	<b>74,906</b>	\$	<b>81,955</b>	\$	<b>72,433</b>	\$	<b>83,081</b>	\$	<b>124,477</b>	\$	<b>124,477</b>	\$	<b>804,776</b>
<b>Federal Reimbursable (Revenues)<sup>1</sup></b>	\$	<b>(7,034)</b>	\$	<b>(12,278)</b>	\$	<b>(7,728)</b>	\$	<b>(8,131)</b>	\$	<b>(15,355)</b>	\$	<b>(17,709)</b>	\$	<b>(16,293)</b>	\$	<b>(11,326)</b>	\$	<b>(10,818)</b>	\$	<b>(12,459)</b>	\$	<b>(12,459)</b>	\$	<b>(119,131)</b>
<b>Net Incremental Costs</b>	\$	<b>28,107</b>	\$	<b>82,713</b>	\$	<b>81,652</b>	\$	<b>65,718</b>	\$	<b>59,208</b>	\$	<b>57,197</b>	\$	<b>65,662</b>	\$	<b>61,107</b>	\$	<b>72,263</b>	\$	<b>112,018</b>	\$	<b>112,018</b>	\$	<b>685,645</b>
<b>With Carryover from Table E</b>	\$	<b>1,792,535</b>	\$	<b>1,820,642</b>	\$	<b>1,903,355</b>	\$	<b>1,985,007</b>	\$	<b>2,050,725</b>	\$	<b>2,109,933</b>	\$	<b>2,167,130</b>	\$	<b>2,232,792</b>	\$	<b>2,293,899</b>	\$	<b>2,366,162</b>	\$	<b>2,366,162</b>	\$	<b>2,478,180</b>
<b>Total Cumulative Net Costs</b>	\$	<b>1,792,535</b>	\$	<b>1,820,642</b>	\$	<b>1,903,355</b>	\$	<b>1,985,007</b>	\$	<b>2,050,725</b>	\$	<b>2,109,933</b>	\$	<b>2,167,130</b>	\$	<b>2,232,792</b>	\$	<b>2,293,899</b>	\$	<b>2,366,162</b>	\$	<b>2,366,162</b>	\$	<b>2,478,180</b>

<sup>1</sup> Federal reimbursable costs and reimbursements for these costs are excluded from the costs for FY 1982-2000. These costs and reimbursements netted out close to zero.

<sup>2</sup> Incremental costs exclude the cost of financing the current year's conservation efforts and the interest expense associated with prior year expenditures that were capitalized and debt financed.

Additional notes for Table D

- Beginning with FY 2007, federal is a separate program with a separate line within the commercial sector.
- Conservation costs do not include an allocation of general and administrative overhead costs.
- Conservation Modernization (ConMod) expenditures totaling \$48,140,000 incurred during FY 1988-1999 are omitted from this table, as the ConMod conservation savings have expired and are, therefore, not included in Table A.

**TABLE D-2: BPA's Annual Conservation Expenditures by Major Categories, FY 2001-2010 (\$ 000)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<b><u>Direct Program Costs:</u></b>										
Market Transformation Expense	\$9,603	\$7,798	\$9,321	\$9,709	\$7,956	\$10,140	\$10,771	\$9,353	\$9,631	\$9,831
Grant Expense	3,103	2,429	3,745	2,475	3,817	4,029	4,188	4,135	6,569	4,735
Conservation & Renewables Discount Expense	9,600	38,864	39,492	29,842	24,609	16,226	0	0	0	0
Conservation Rate Credit Expense	0	0	0	0	0	3,495	29,925	26,326	23,495	25,413
Subtotals	9,600	38,864	39,492	29,842	24,609	19,721	29,925	26,326	23,495	25,413
Initiatives, & Evaluation Costs	1,229	1,445	4,379	837	602	969	1,643	4,176	6,475	8,608
Direct Acquisition/Capitalized Costs	57	28,227	22,900	19,432	14,750	14,970	10,725	8,763	16,790	50,486
<b>Subtotal Direct Program Costs</b>	<b>23,592</b>	<b>78,763</b>	<b>79,837</b>	<b>62,295</b>	<b>51,734</b>	<b>49,829</b>	<b>57,252</b>	<b>52,753</b>	<b>62,960</b>	<b>99,073</b>
<b><u>Staffing and Indirect Costs:</u></b>										
Staffing Costs	4,874	5,570	5,742	5,921	6,456	6,840	6,388	7,059	7,845	7,256
Indirect Costs and Sales Support Expense	5,270	4,686	2,334	2,642	2,280	1,004	1,143	1,416	2,064	3,020
Subtotal	10,144	10,256	8,076	8,563	8,736	7,844	7,531	8,475	9,909	10,276
<b><u>Other and Reimbursable Costs:</u></b>										
Other Costs / Adjustments	(5,574)	(4,081)	(7,607)	(5,275)	0	0	0	0	0	0
Federal Reimbursable Program Costs	6,979	10,053	9,074	8,266	14,093	17,233	17,172	11,205	10,212	15,128
Subtotal	1,405	5,972	1,467	2,991	14,093	17,233	17,172	11,205	10,212	15,128
<b>Gross Annual Conservation Expenditures</b>	<b>\$35,141</b>	<b>\$94,991</b>	<b>\$89,380</b>	<b>\$73,849</b>	<b>\$74,563</b>	<b>\$74,906</b>	<b>\$81,955</b>	<b>\$72,433</b>	<b>\$83,081</b>	<b>\$124,477</b>
<b>Federal Cost Reimbursements</b>	<b>(\$7,034)</b>	<b>(\$12,278)</b>	<b>(\$7,728)</b>	<b>(\$8,131)</b>	<b>(\$15,355)</b>	<b>(\$17,709)</b>	<b>(\$16,293)</b>	<b>(\$11,326)</b>	<b>(\$10,818)</b>	<b>(\$12,459)</b>
<b>Net Annual Conservation Expenditures</b>	<b>\$28,107</b>	<b>\$82,713</b>	<b>\$81,652</b>	<b>\$65,718</b>	<b>\$59,208</b>	<b>\$57,197</b>	<b>\$65,662</b>	<b>\$61,107</b>	<b>\$72,263</b>	<b>\$112,018</b>

**TABLE E: BPA's Historical Conservation Costs, FY 1982-2000 (\$ 000) <sup>10</sup>**

<b>Fiscal Year</b>	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>	<b>Con/Mod</b>	<b>Agricultural</b>	<b>Multi-Sector Acq.</b>	<b>Program &amp; Support Costs</b>	<b>Third Party Financing Costs</b>	<b>Debt Service Payments Adjustment</b>	<b>Various Costs Adjustment (e.g. Bond Transaction Costs)</b>	<b>Total Incremental Costs</b>	<b>Total Cumulative Costs</b>
1982	\$50,346	\$11,247	\$0	\$0	\$0	\$0	\$5,321	\$0	\$0	\$0	\$66,914	\$66,914
1983	\$162,114	\$39,892	\$1,409	\$0	\$895	\$0	\$2,689	\$0	\$0	\$0	\$206,999	\$273,913
1984	\$57,374	\$8,656	\$513	\$0	\$1,309	\$0	\$7,242	\$0	\$0	\$0	\$75,094	\$349,007
1985	\$77,907	\$26,553	\$957	\$0	\$2,098	\$0	\$20,232	\$0	\$0	\$0	\$127,747	\$476,754
1986	\$79,898	\$13,007	\$1,013	\$0	\$3,546	\$0	\$7,458	\$2,125	(\$2,048)	\$0	\$104,999	\$581,753
1987	\$60,651	\$7,546	\$2,233	\$0	\$1,918	\$0	\$11,008	\$4,250	(\$2,047)	(\$10,000)	\$75,559	\$657,312
1988	\$40,979	\$14,144	\$3,297	\$1,881	\$2,166	\$3,950	\$8,483	\$4,250	(\$2,045)	(\$10,000)	\$67,105	\$724,417
1989	\$37,269	\$15,467	\$5,889	\$4,726	\$1,428	\$3,000	\$5,479	\$4,250	(\$2,048)	(\$11,748)	\$63,712	\$788,129
1990	\$40,016	\$18,062	\$5,681	\$6,063	\$1,428	\$3,232	\$3,515	\$2,125	(\$2,043)	\$0	\$78,079	\$866,208
1991	\$49,808	\$19,554	\$6,181	\$6,254	\$3,257	\$2,959	\$3,495	\$0	(\$1,983)	\$0	\$89,525	\$955,733
1992	\$80,949	\$25,334	\$8,397	\$4,553	\$2,593	\$6,673	\$4,134	\$0	(\$1,986)	\$0	\$130,647	\$1,086,380
1993	\$89,241	\$32,485	\$13,899	\$4,179	\$2,187	\$7,944	\$8,119	\$0	(\$1,905)	\$0	\$156,149	\$1,242,529
1994	\$77,726	\$45,764	\$22,383	\$6,462	\$2,617	\$17,133	\$8,210	\$6,212	(\$6,453)	\$0	\$180,054	\$1,422,583
1995	\$49,783	\$23,061	\$17,346	\$4,045	\$1,712	\$26,676	\$7,915	\$12,824	(\$7,408)	\$0	\$135,954	\$1,558,537
1996	\$29,071	\$13,540	\$9,839	\$4,595	\$1,227	\$34,330	\$7,863	\$12,824	(\$7,483)	\$0	\$105,806	\$1,664,343
1997	\$10,744	\$7,770	\$3,988	\$2,744	\$338	\$16,373	\$13,700	\$12,624	(\$7,305)	\$0	\$60,976	\$1,725,319
1998	\$5,767	\$10,495	\$3,764	\$2,358	\$173	\$12,857	\$19,200	\$12,023	(\$7,670)	\$0	\$58,967	\$1,784,286
1999	\$4,233	\$5,888	\$1,902	\$280	\$49	\$20,438	\$13,500	\$6,012	(\$11,637)	\$0	\$40,665	\$1,824,951
2000	\$2,531	\$85	\$0	\$0	\$5	\$0	\$20,550	\$0	(\$7,447)	\$0	\$15,724	\$1,840,675
<b>Total</b>	<b>\$1,006,407</b>	<b>\$338,550</b>	<b>\$108,691</b>	<b>\$48,140</b>	<b>\$28,946</b>	<b>\$155,565</b>	<b>\$178,113</b>	<b>\$79,519</b>	<b>(\$71,508)</b>	<b>(\$31,748)</b>	<b>\$1,840,675</b>	

<sup>10</sup> Program and program support costs include the overhead costs of the Energy Efficiency group and other conservation support costs.



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## **SPECIAL NOTE**

Dividing the dollars in tables D and E by the energy savings in tables A, B or C does not take into consideration the varying lifetimes and characteristics of energy resources and is, therefore, not an appropriate calculation. For example, 1 aMW of energy savings from a new residential building code program with an expected measure life of 70 years cannot be equated with 1 aMW of savings from a program having a much shorter measure life.

The simple division method also is inappropriate.

- Some savings were achieved in pay for performance or competitive acquisition contracts. These savings are reported as first year savings while the cost is paid from year-to-year expense budgets over a number of years.
  - Most savings were paid for from the capital budget and costs were amortized through federal borrowing. BPA's cost for these projects shows up as the capital cost and not the year-to-year amortization payments. Therefore, the way savings are treated is consistent year-to-year, while the costs are a mixture of predominantly capital with a substantial expense component.
  - The cost tables make no distinction between capital and expense payments. This means not all year-to-year costs can be directly compared to any single year savings reported.
  - Certain individual projects may receive funding in one year, but the savings may not be achieved until the following year.
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## GLOSSARY

Average megawatt (aMW)	aMW refers to a unit of energy output over a year, equivalent to the energy produced by the continuous operation of one megawatt of capacity over a period of time. It is also an average of one million watts transferred over a period of time (often a year, thus average annual megawatts). One aMW is therefore equivalent to one megawatt produced continuously for 8,760 hours (the number of hours in a year) for a total of 8,760 megawatt-hours.
Billing credit	Adjustment to the BPA customer's electric power bill, or the equivalent cash payment, for a reduction in the customer's net requirement of capacity and energy purchased from BPA resulting from a conservation activity independently undertaken.
BPA direct funded	Various savings fall under this category of funding and include BPA contributions for market transformation, one-time grants for pilot projects (agricultural) and direct installations of measures during BPA-funded audits under the Energy Smart Grocer program.
Commercial Incentives Pilot Program (CIPP)	CIPP was a payment-for-performance endeavor under BPA sponsorship that provided financial reimbursement to utilities for energy conservation measures installed by commercial customers.
Commercial and Residential End Use Study (CREUS)	CREUS provided electric energy usage information on various types of loads typically found in either commercial or residential buildings. Businesses and homes were randomly selected throughout the region and various end-use loads were monitored for several months. The data were collected and analyzed. A few businesses installed some measures during 1989 based on the energy use data.
Compact fluorescent light (CFL)	A CFL is an energy efficient electric light used primarily in residential applications. The CFL is a fluorescent bulb that normally can be screwed into any standard lighting fixture. Some models can only be used with special fixtures designed to insure the lights are not replaced with inefficient incandescent light bulbs.
Competitive acquisition	BPA's process of soliciting and selecting, by means of systematic criteria, conservation and generating resources from customers and noncustomers for long-term use.
Conservation	Conservation means any reduction in electric energy consumption resulting from an increase in the efficiency of electric energy use, production or distribution; the direct application of a renewable resource; or modifications in consumer behavior that decrease energy consumption.
Conservation Acquisition Agreement (CAA)	CAA is a resource acquisition contract with utility customers intended to reduce BPA's load obligation through mechanisms for delivering energy savings. This contract was the successor to the expired ConAug contract.

Conservation and Renewable Discount (C&RD)	C&RD was a component of BPA's 2002 - 2006 wholesale power rates. C&RD was a credit available to BPA's regional wholesale power customers that took action to further conservation and renewable resource development.
Conservation Augmentation (ConAug)	ConAug was a resource acquisition component of BPA's system augmentation effort intended to reduce BPA's load obligation through mechanisms for delivering energy savings.
Conservation Modernization (ConMod)	ConMod was a legacy conservation program designed to save energy in the Northwest aluminum industry. The program was designed to save energy by offering a 5-mill (0.5 cent) incentive for every kWh of energy saved while producing one pound of aluminum.
Conservation Rate Credit (CRC)	CRC was a component of BPA's wholesale power rates. CRC is a credit that is available to BPA's regional wholesale power customers that take action to further conservation development.
Direct acquisition	Programs that pay for energy efficiency measures that result directly from actions taken, such as installing measures, rather than from paying someone for activities, such as code enforcement, or employing other programs that indirectly cause conservation to occur. Acquisition is a term from the Northwest Power Act used when conservation activity is equivalent to, and as reliable as, acquiring actual generation-produced energy. Under the Power Act, acquisition of energy, whether through conservation or through generation, must be done under contracts that allow for rigorous verification.
Directly served customer	Direct-service industries (DSI), primarily aluminum smelters, and federal agencies that buy electricity directly from BPA for their own use.
Energy Conservation Agreement (ECA)	ECA is a resource acquisition contract with utility customers intended to reduce BPA's load obligation through mechanisms for delivering energy savings. This contract was the successor to the expired CAA contracts.
Energy conservation measures (ECMs)	Materials or equipment installed or activities implemented to produce electric energy savings. A specific action or installed device that saves energy. Also referred to as a conservation measure.
Energy Savings Plan (ESP)	A conservation program that acquired energy savings specifically from conservation projects in the industrial sector. ESP was a legacy conservation program that provided incentives for improvements in energy efficiency in industrial processes (other than in the aluminum industry). This program served both new and existing industries. The program depended on audits or design reviews to identify potential cost effective savings. Actual savings and the amount of incentive paid were determined through pre- and post-metering for existing industrial processes or between estimated use and actual metered use in new industrial plants.

Energy Smart Design (ESD)	ESD was a conservation program initially designed to reward builders for significant savings features in new commercial buildings. It eventually became a standard design program to increase efficiency above codes and to change building practices to bring about codes enforcing higher building efficiency standards.
Energy Smart Grocer (ESG)	ESG is a regionwide refrigeration program for the region's public utilities that is delivered by a third-party contractor, PECCI, and directly funded by BPA. This program provides refrigeration energy audits, installs marketing measures and facilitates retrofits in hard-to-reach markets such as supermarkets, grocery stores, convenience stores, schools and other end-use refrigeration in the commercial market sector.
Expanded Standard Offer (ESO)	The ESO for commercial and industrial lighting under ConAug was based on set payments for specific lighting measures that save energy above standard lighting practices.
Federal	In late January 2001, BPA began to develop load reduction projects at federal properties in the Pacific Northwest load-following service areas. A key principle in federal projects is that BPA funds must produce incremental conservation that would otherwise not be delivered.
First-year savings	BPA programs are reported in terms of the savings that occur in one year, although the cost effectiveness of measures is based on the expected life of the measure. Measures can last 10, 20 or more years. Therefore, total savings are calculated by multiplying the first-year savings by the measure life.
Flex agreements	These were contracts with utilities to use money “flexibly” from one program or sector to another without seeking approval on each change. From FY 1995-1999, this provided utilities with the opportunity to move BPA funds from one sector to another without going through an approval process when there were cost-effective opportunities to achieve. The program required that the average cost per kWh saved would be equal to or less than the average cost for conservation were it allocated out into the various individual programs that were available to the utilities. For example, residential weatherization costs more than industrial, so, if the utility increased expenditures on residential above the allocated budget, it had to find other less costly kWh savings or repay the difference to BPA.
Fuel choice	A possible unintended result that a consumer might choose to use electrical energy rather than gas or another fuel due to incentives for energy efficiency measures for electrically heated homes or electrical industrial and commercial uses.
High Water Mark	See utility funded.
HVAC	Heating, ventilation and air conditioning systems include furnaces, ducts, air control system filters, baffles, motors, vents, sensors and chillers. These systems present many efficiency improvement opportunities. HVAC systems are found in houses and industrial facilities, but the primary use of the term is associated with cooling, heating and venting of air within large commercial structures.

Investor-owned utility (IOU)	An IOU is a corporation owned by investors that meets the definition of an electrical company that is engaged in distributing electricity to more than one retail electric customer.
Invitation to Reduce Load through Conservation (IRLC)	IRLC refers to ConAug contracts that utility customers began signing in FY 2001. Various energy conservation measures are authorized for installation through the IRLC portion of contracts. The umbrella contract for each utility is a Purchase of Conservation Agreement (PCA).
Irrigation hardware	Equipment that includes items such as sprinklers, pumping plants, fittings and mainlines used to reduce operating pressure.
Irrigation Rate Mitigation Product (IRMP)	The Irrigation Rate Mitigation Product was a rate reduction provided to utilities with large irrigation loads during May through August of the irrigation season.
Irrigation Scheduling	By careful measurement of soils for water content as well as evaluation of air temperature, wind speed and other weather information, irrigation can be planned (scheduled) in such a way that crop growth is optimized and water use reduced. Using less water saves electricity because less water must be pumped up to the fields and forced through irrigation systems.
Legacy	Legacy refers to the conservation activities started prior to FY 2000 that are still operating. These include low-income weatherization, the Energy Northwest pay-for-performance contract, the Tacoma Fort Lewis program and some others with minor savings impacts.
Limited Standard Offer (LSO)	The LSO was the first standard offer made to utilities within the ConAug program. It provided incentives for commercial buildings based on set payments for specific lighting measures that saved energy above standard lighting practices.
Line loss	The electric energy lost (dissipated) during transmission and distribution of electricity.
Load following	Load following generally refers to automatic adjustments in generation that follow changes in customer load in order to maintain a continuous balance between loads and generation.
Long-Term Super Good Cents	The final version of the new residential construction program that was designed to save energy and to influence code development. Long term refers to the fact that this program was increased above the existing code standards and was to be available for some years after codes were achieved.
Low-Income Residential Weatherization (states):	This program mitigates the rising energy costs that make it difficult for low-income citizens to adequately heat their homes. The program helps conserve energy resources in state programs (for example, Community Action Partnership) and thereby reduces the need to obtain energy from more costly conventional energy resources. Low income means household income that is at or below 125 percent of the federal poverty level.

Major plants	Energy conservation projects that involved industrial plants with significant electric loads. The top 100 industrial energy users were targeted for this program.
Manufactured Home Acquisition Program (MAP)	MAP required Super Good Cents building standards certification at the manufactured home factory. A site “set-up” inspection followed factory certification in many instances.
Market transformation	<p>A program designed to cause new technologies to be built or accepted as standard practice. Super Good Cents is an example of a program designed to change the home building standards and the market.</p> <p>Market transformation now refers to a specific programmatic effort operated through the Northwest Energy Efficiency Alliance (NEEA) that receives funding directly from BPA and additional funding from utilities.</p>
Model Conservation Standards (MCS)	MCS were called for in the Northwest Power Act. The Northwest Power and Conservation Council, authorized through the NW Power Act to set standards and plan for future conservation and power acquisition, and BPA worked together to set the MCS and to encourage utilities to create programs to begin promoting such standards. MCS was designed as an early step in energy efficiency code standards, which three of the four Northwest states served by BPA eventually adopted.
Multisector	Multisector is a catchall term for savings that don’t fit into a single sector.
ODOE – Schools	BPA’s support of the Oregon Department of Energy (ODOE) program for conservation assistance for schools.
Payment for performance	Mechanism through which payments were made over time as energy savings were verified. This mechanism gave autonomy to utilities and built their capability to acquire conservation savings.
PECI	PECI is a company that consults with clients to develop and implement custom, cost-effective energy efficiency programs.
PSP&L	Former name of Puget Sound Energy, an IOU that serves some of the load in the Puget Sound region of Washington.
Savings with a Twist™ (SWAT)	SWAT is designed to help transform markets by encouraging consumers to buy compact fluorescent lights. SWAT is a buy-down program that involves manufacturers. SWAT-discounted CFLs are sold at retail stores throughout the Pacific Northwest through seasonal campaigns, typically fall and winter.
Sector	Sector refers to a segment of a market, such as residential, commercial, industrial and agricultural end users. Each sector employs a different approach and program design specific to its contents.
Sponsor- Designed	Implemented during the 1980’s, this was BPA’s first regular industrial sector conservation acquisition program. Industries submitted proposals for conservation and BPA contracted directly with the industries whose proposals were accepted.
Super Good Cents	See listing for Long-Term Super Good Cents.

System efficiencies	System efficiencies refer to improvements in transmission, distribution and transformers that save energy. Examples include lower-loss transformers (silicon core), reconductored distribution lines with higher voltage and conservation voltage reduction, which lowers the voltage on distribution lines and saves energy during low load time periods.
Targeted Acquisition Program (TAP)	Under this legacy program, local utilities created and offered commercial conservation programs for their customers, and BPA verified energy savings. The contract provided flexibility to determine the pace of a utility's delivery of conservation and to select the type of conservation produced.
Technical assistance information	During the 1980's, this was a Technical Assistance Studies (TAS) program whereby technical assistance information was provided by the various state energy offices for the Institutional Program (primary and secondary schools). This was a Department of Energy sponsored effort with support from BPA and the states.
Third-party financing	A financial arrangement between BPA and other entities to use sources of capital other than BPA's borrowing authority from the U.S. Treasury or congressional appropriations to fund new capital assets.
Utility	Utility refers to an electric utility that is either consumer-owned or investor-owned. A consumer-owned utility can be a municipal electric utility, a public utility district, an irrigation district, a cooperative, a mutual corporation or an association that is engaged in the business of distributing electricity to one or more retail electric customers.
Utility self-funded	Beginning in FY 2007 and continuing through FY 2010, utilities can choose to self-fund conservation and achieve credit towards the conservation adjustment as described in the Tiered Rates Methodology, which went into effect in FY 2012. To be eligible, conservation activities must meet the same requirements as BPA-funded activities.
VendingMi\$er®	A program to install energy savings controllers that cycle vending machines off and on during times in which usage has been minimal. The on/off cycle maintains the quality of the products sold.
Water/waste water	BPA began this program in March 2001 to make the water/wastewater treatment process more energy efficient. Plants in locations served by load following customers were eligible. These facilities are one of the largest energy users in a community.
Weatherization	Modifying a building envelope to reduce energy consumption for heating or cooling. Weatherization measures can include adding insulation, installing storm windows and doors, caulking cracks and adding weather stripping.

