



**30 Years of Conservation Success**

**A Conservation Power Plant-- One Customer at a Time**



**Seattle City Light**

August 12, 2008



# *Presentation Outline*

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- **Overview**
- **30 Years of Energy Conservation**
- **Recent Achievements**
- **Proposed Five Year Plan**



# 30 Years of Conservation Success

## *Population and Economic Profile of Seattle*

**For the last 18 years, Seattle has experienced strong population and economic growth:**

- Added 47,000 new residents in the 1990's.
- 1/3 of residents lived in another city 5 years prior.
- Young adults in 20's & 30's the largest age group.
- Median household income grew by 16 percent.
- In 2005 alone, metro Seattle generated \$166.9 billion in goods and services (70% of state GDP).

(source: Puget Sound Regional Council)

# 30 Years of Conservation Success



# **30 Years of Conservation Success**

## ***Service Territory and Fast Facts***

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**Seattle City Light serves the communities of:**  
Burien, Lake Forest Park, Normandy Park,  
Renton, SeaTac, Seattle, Shoreline, Tukwila  
and some parts of unincorporated King County.

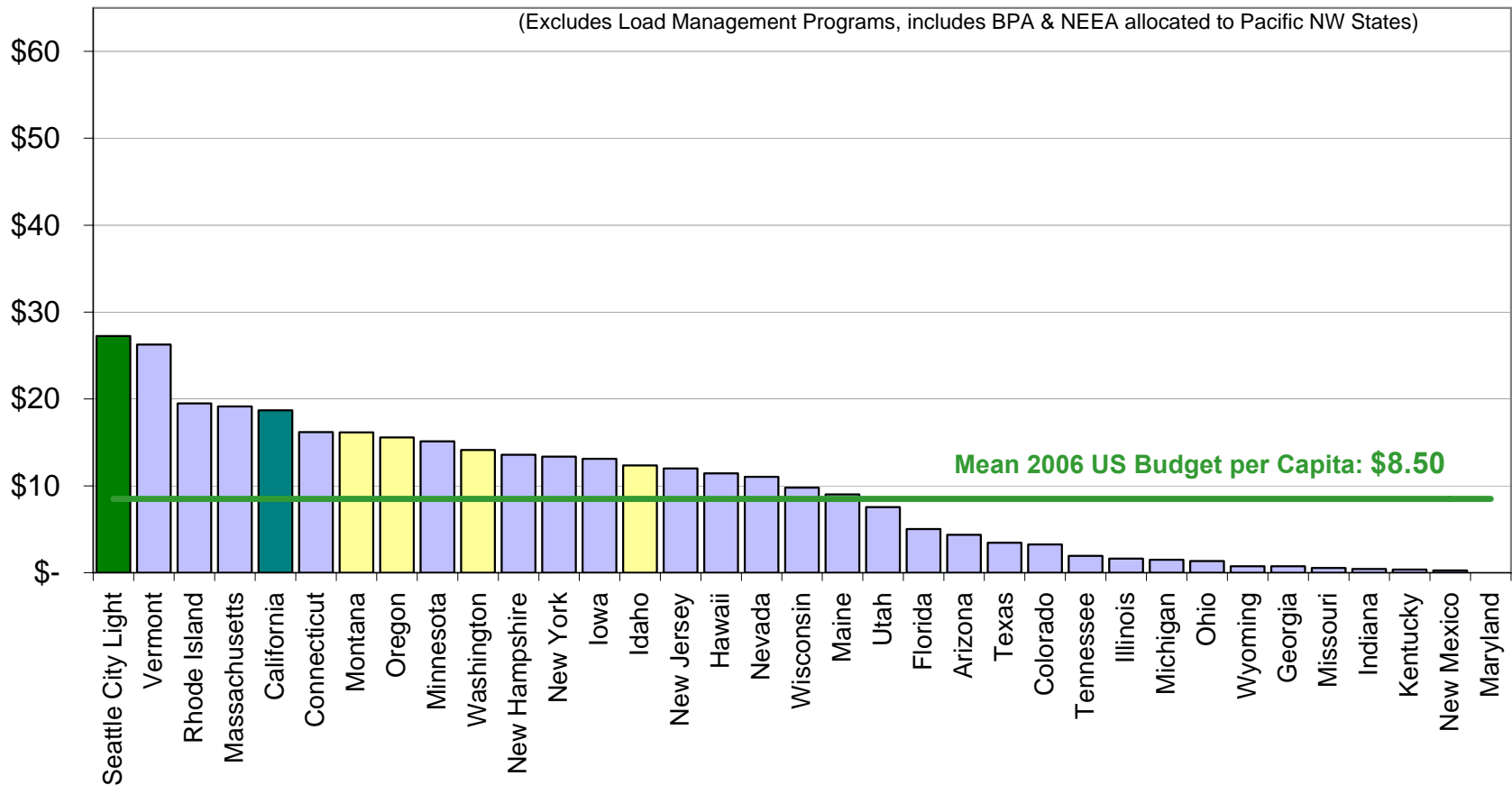
### **2007 load and revenues:**

- **741,600 service area population**
- **131 square mile service area**
- **9,599,911 MWh = 1,096 aMW**
- **\$832.5 Million in total operating revenues**

# 30 Years of Conservation Success

## *Energy Efficiency Spending per Capita*

Estimated Per Capita Budgets for Electric Energy-Efficiency Programs  
for All 34 States with Energy-Efficiency Programs

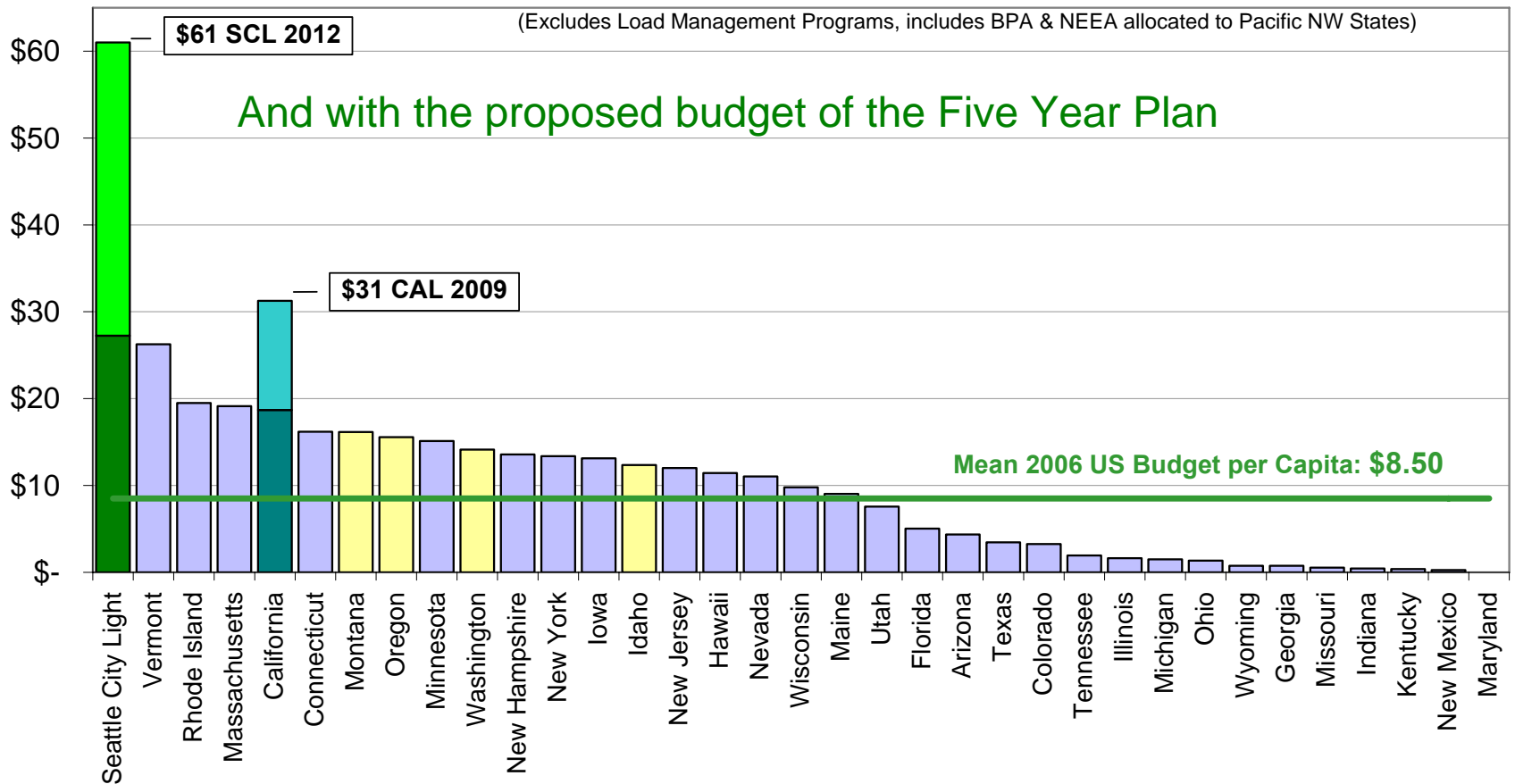


Comparative data source: Consortium for Energy Efficiency. (2007). U.S. Energy Efficiency Programs: A \$2.6 Billion Industry. 2006 Report. Retrieved October 4, 2007 from [http://www.cee1.org/ee-pe/cee\\_budget\\_report.pdf](http://www.cee1.org/ee-pe/cee_budget_report.pdf). For CEE sources, see their Table 4: Estimated 2006 Energy-Efficiency Budgets for Gas Programs, by State and Sector. Table 1: Annual Estimates of the Population for the United States and States, and for Puerto Rico: April 1, 2000 to July 1, 2005 (NST-EST2005-01). Population Division, U.S. Census Bureau. December 22, 2005. <http://www.census.gov/popest/states/NST-ann-est.html>

# 30 Years of Conservation Success

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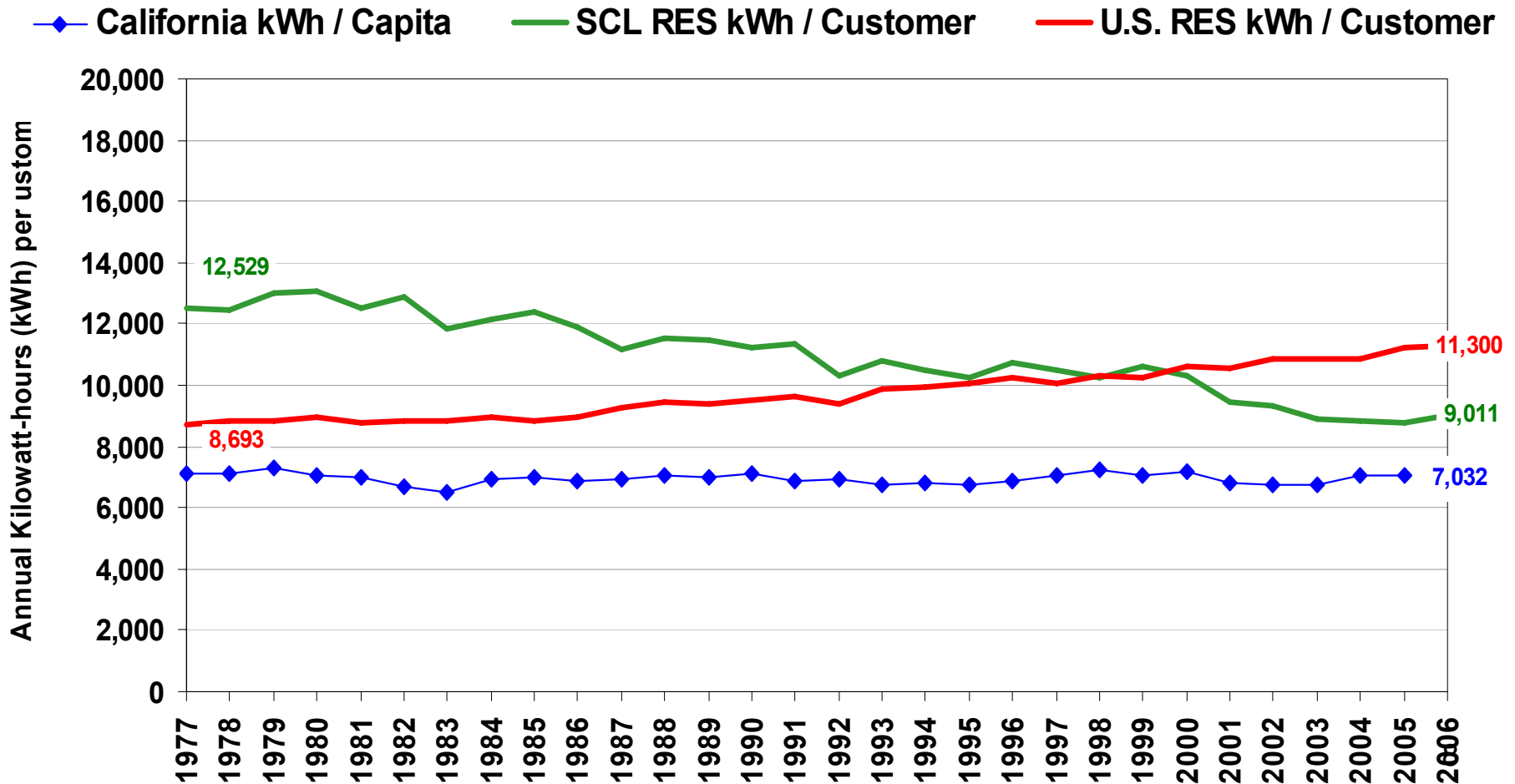


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# 30 Years of Conservation Success

## *SCL Energy Use per Residential Customer*

Residential Electricity Use per Household  
and Total Electric Sales per Capita

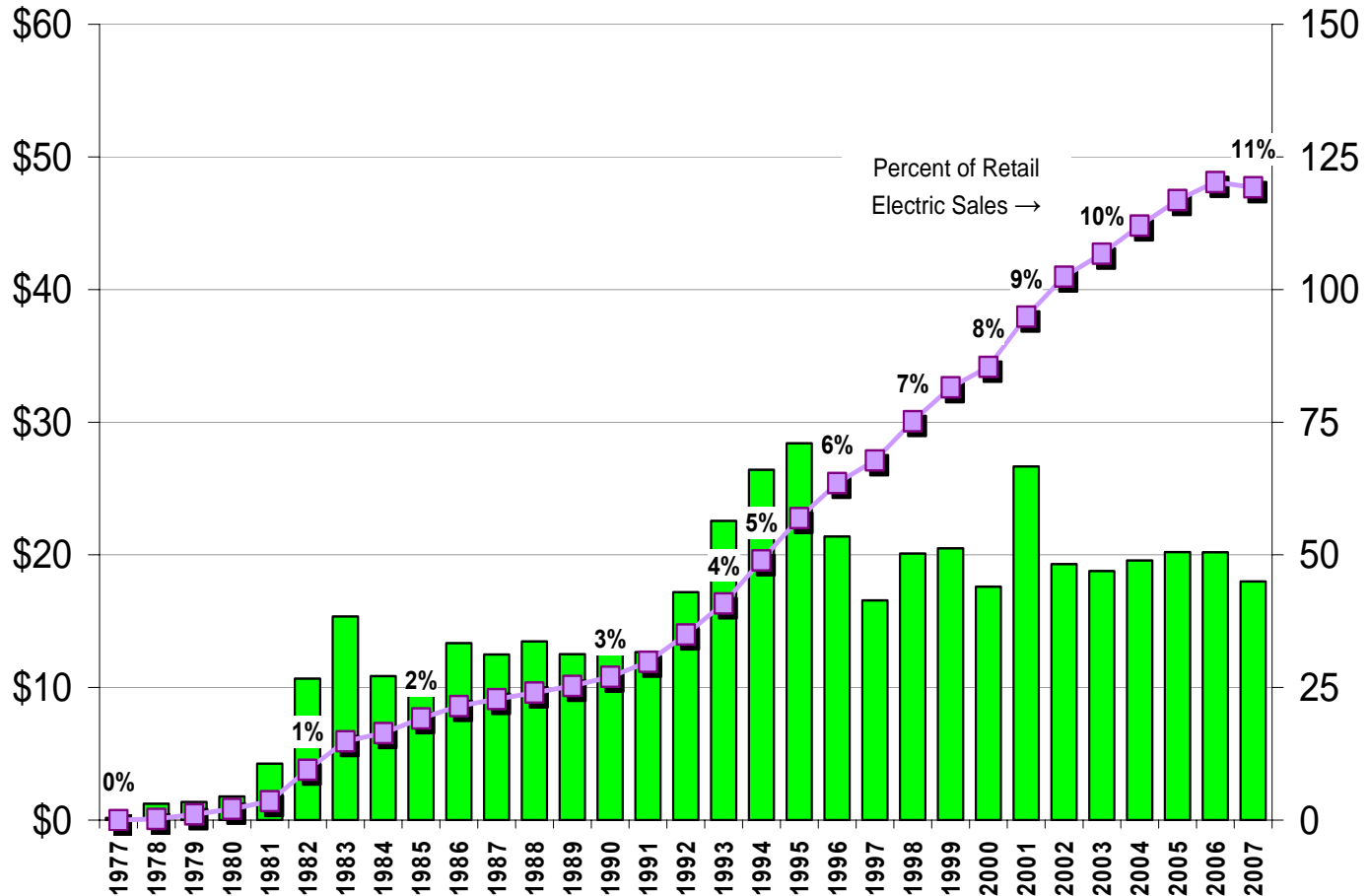


# 30 Years of Conservation Success

## *Annual Expenditures and Load Reduction*

Annual Total Conservation Expenditures  
(Millions, actual dollars)

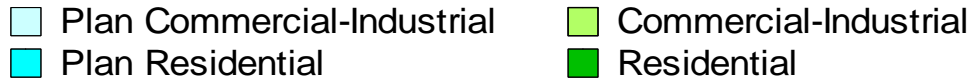
Average Load Reduction in Year (aMW)



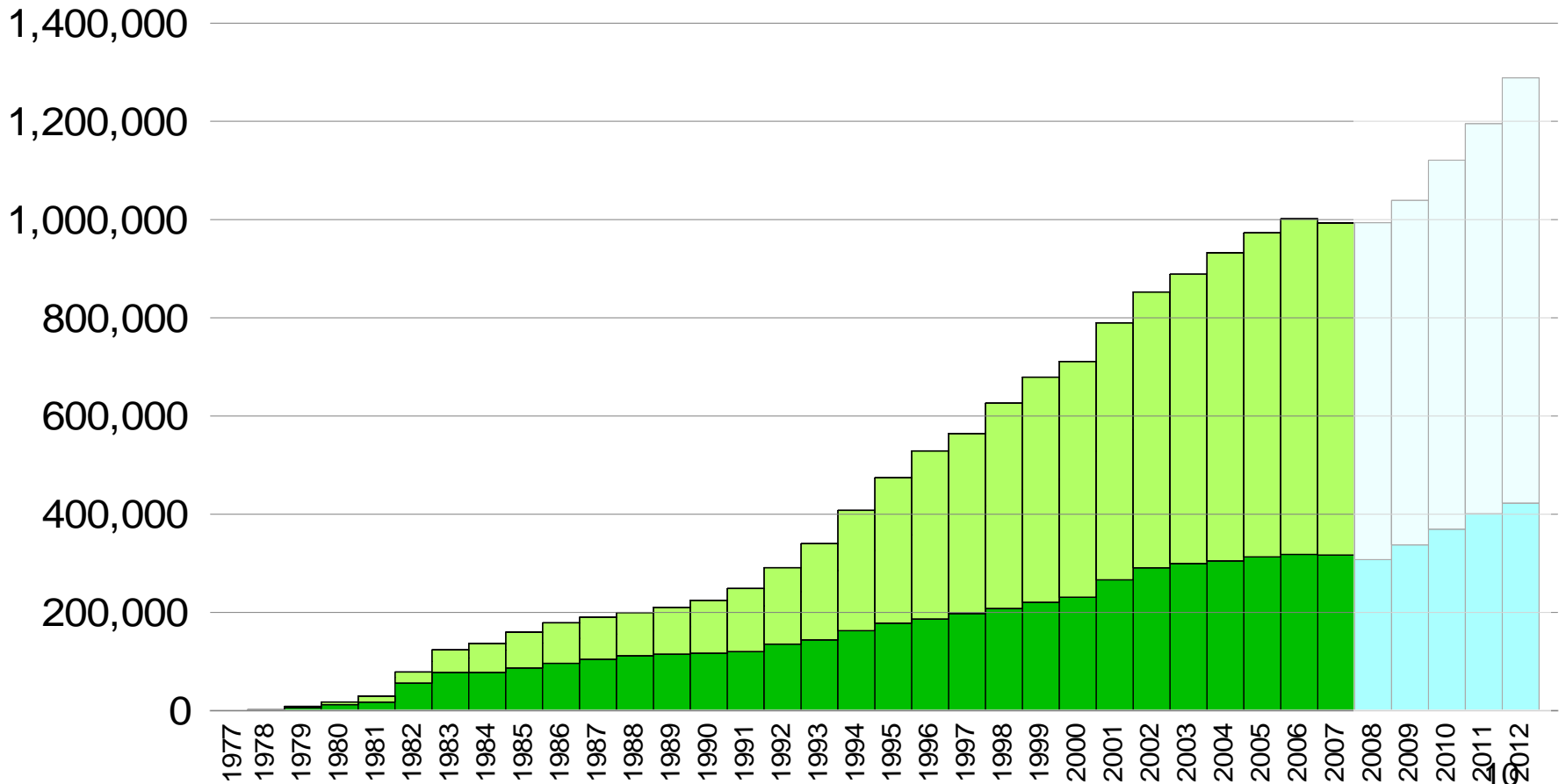
# 30 Years of Conservation Success

## *Cumulative Energy Savings*

Sector:



Megawatt-hours (MWh)



# 30 Years of Conservation Success

## Customer Bill Savings

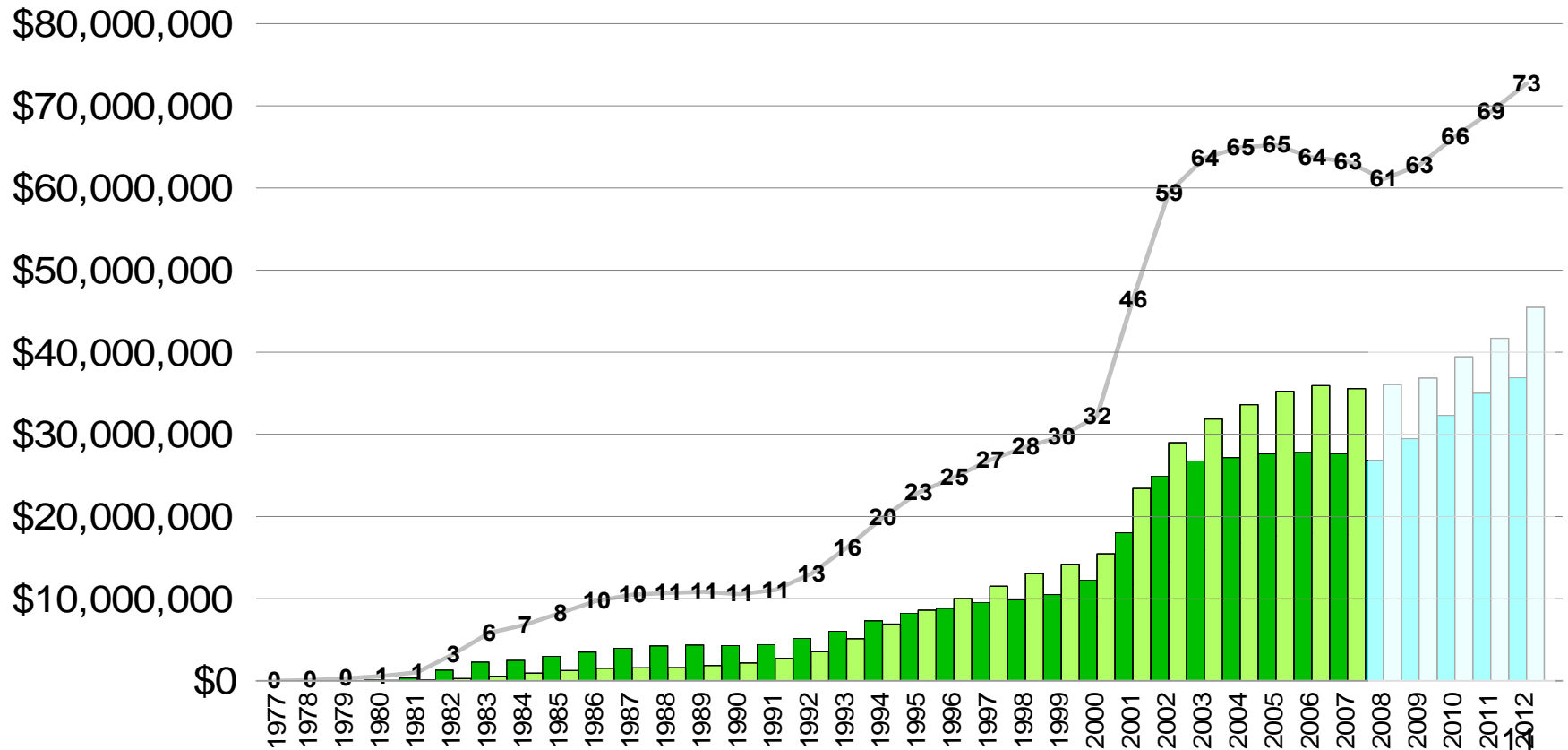
Sector:

- Residential
- Commercial-Industrial
- Residential Plan
- Commercial-Industrial Plan

— Total Present Value (2007)

Commercial-Industrial Plan

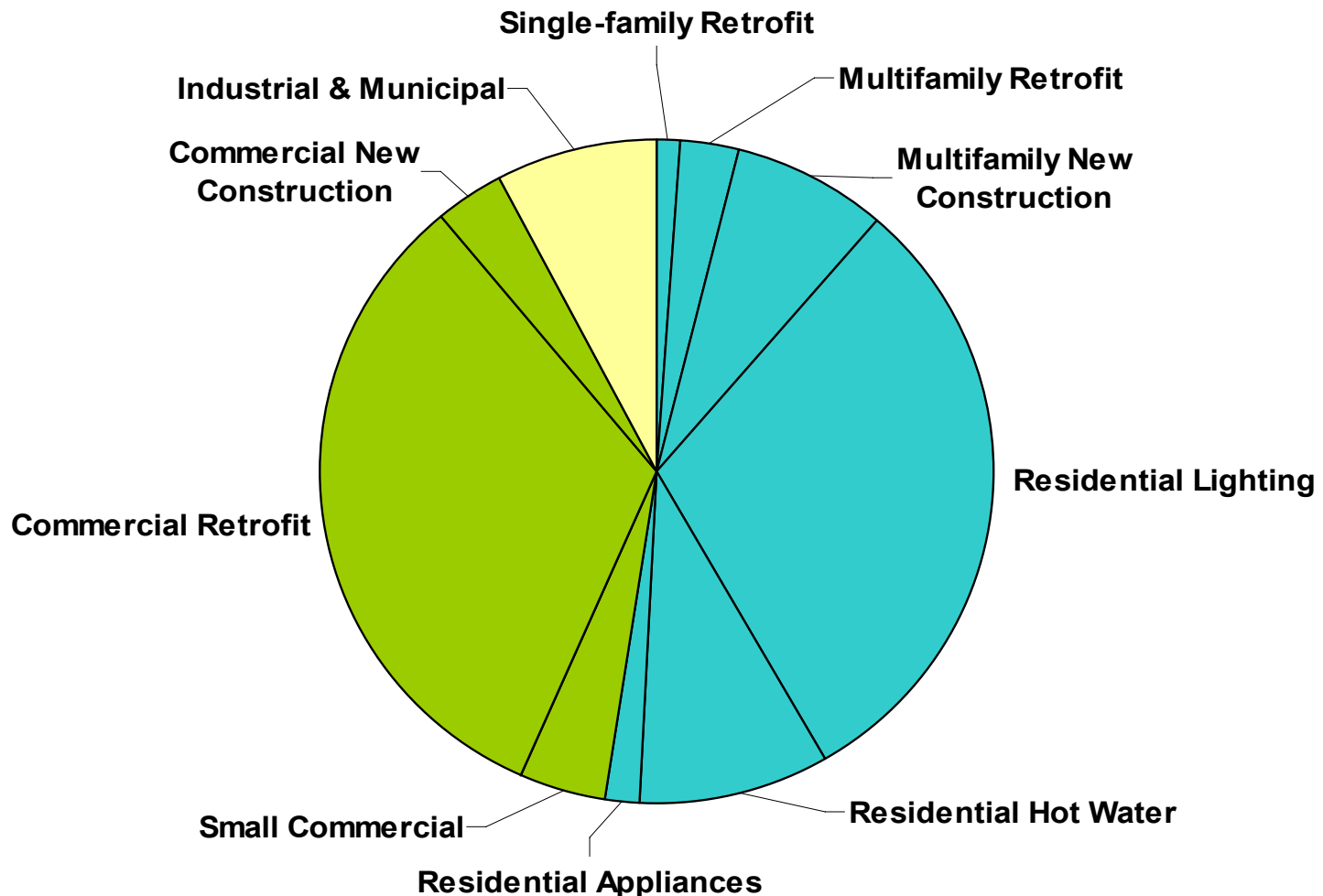
Nominal Dollars



# 30 Years of Conservation Success

## 2007 New Energy Savings

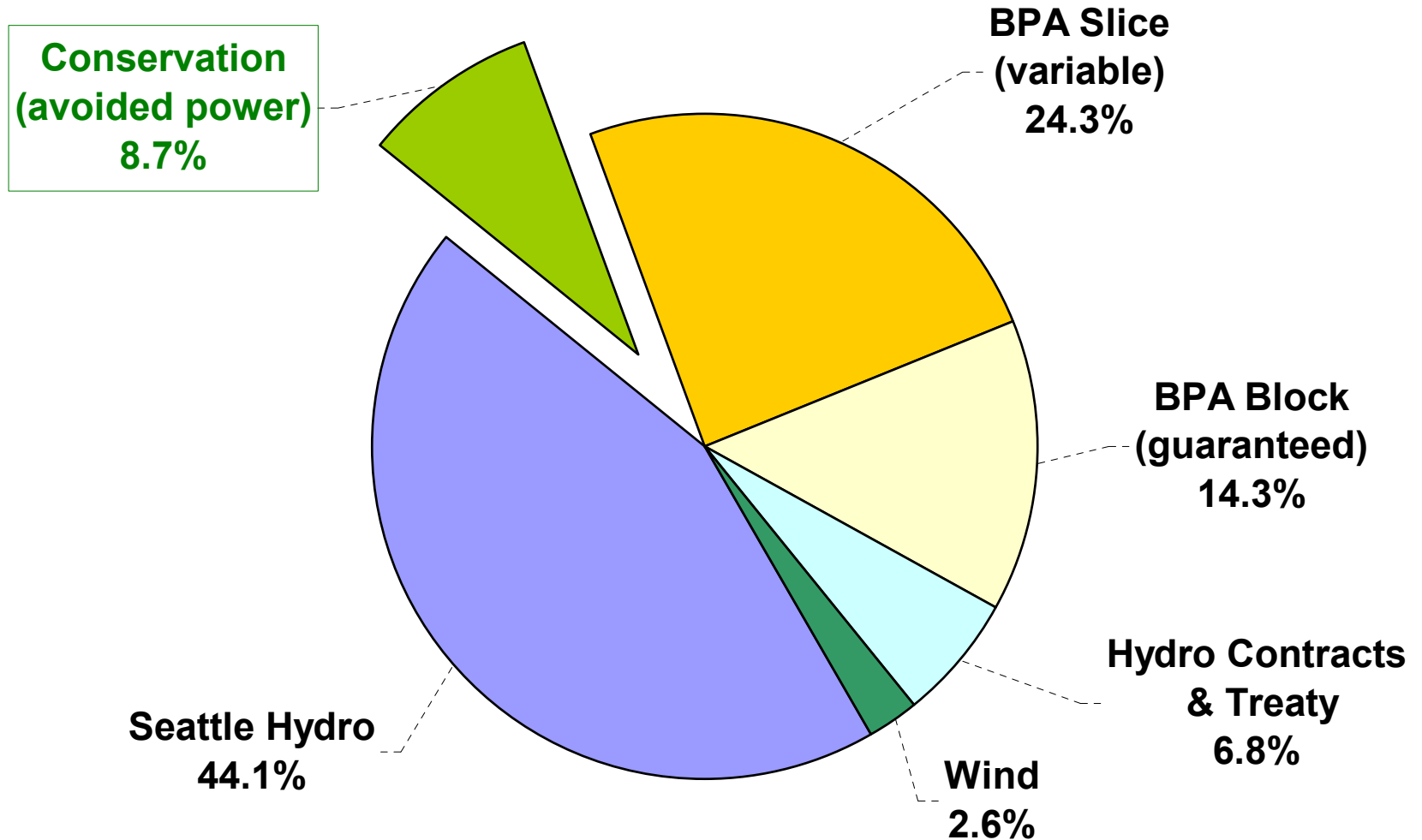
2007 Conservation Energy Savings (new first year MWh)



# 30 Years of Conservation Success

## *2007 Actual and Avoided Power*

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# Conservation Resource Potential Assessment- 2006/07

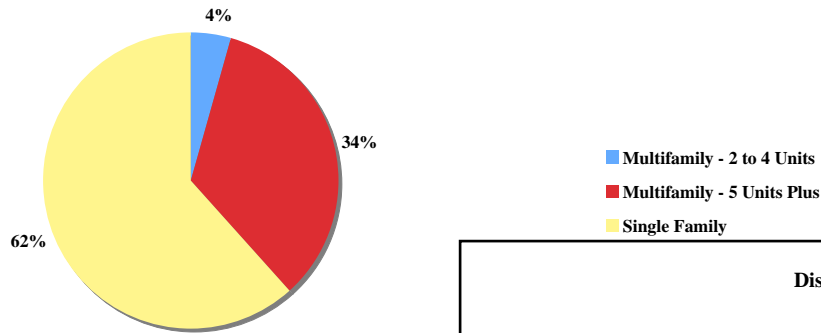
Segment	aMW Savings		
	5 Years	10 Years	15 Years
Residential	21.6	47.2	71.3
Commercial	37.7	81.3	120.4
Industrial	10.3	23.4	37.1
<b>Total</b>	<b>69.6</b>	<b>151.8</b>	<b>228.8</b>
Total as % of Baseline Forecast	5.8%	12.9%	18.1%

**Table 4: Achievable Conservation by Sector**

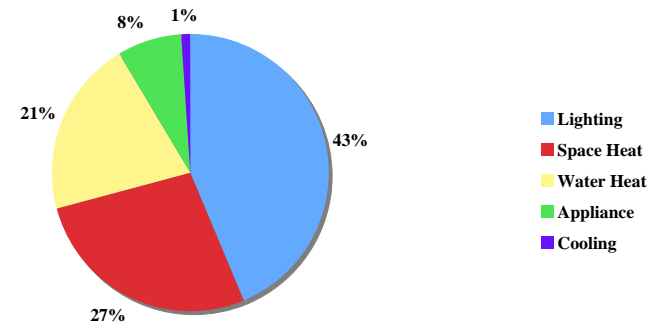
Intend to update in late 2008/early 2009

# Conservation Resource Potential Residential Sector- 2006/07

Distribution of Achievable Potential by Dwelling Type  
Residential Sector

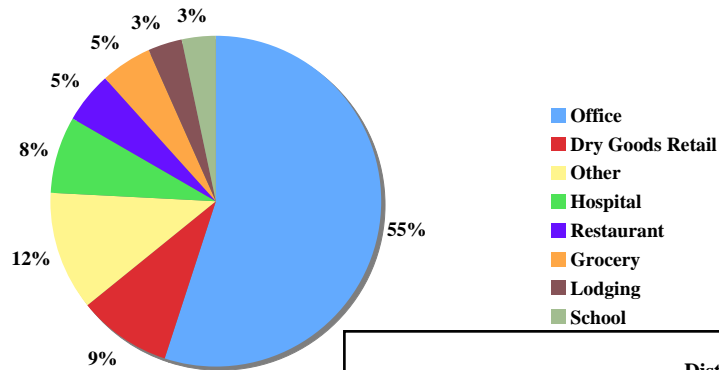


Distribution of Achievable Potential by End Use  
Residential Sector

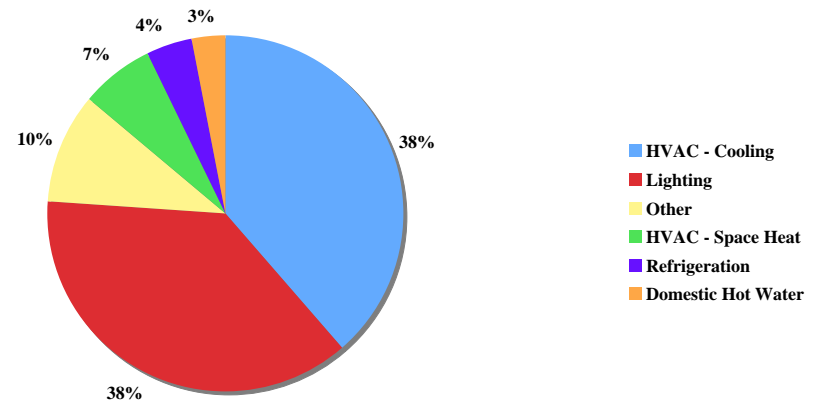


# Conservation Resource Potential Commercial Sector- 2006/07

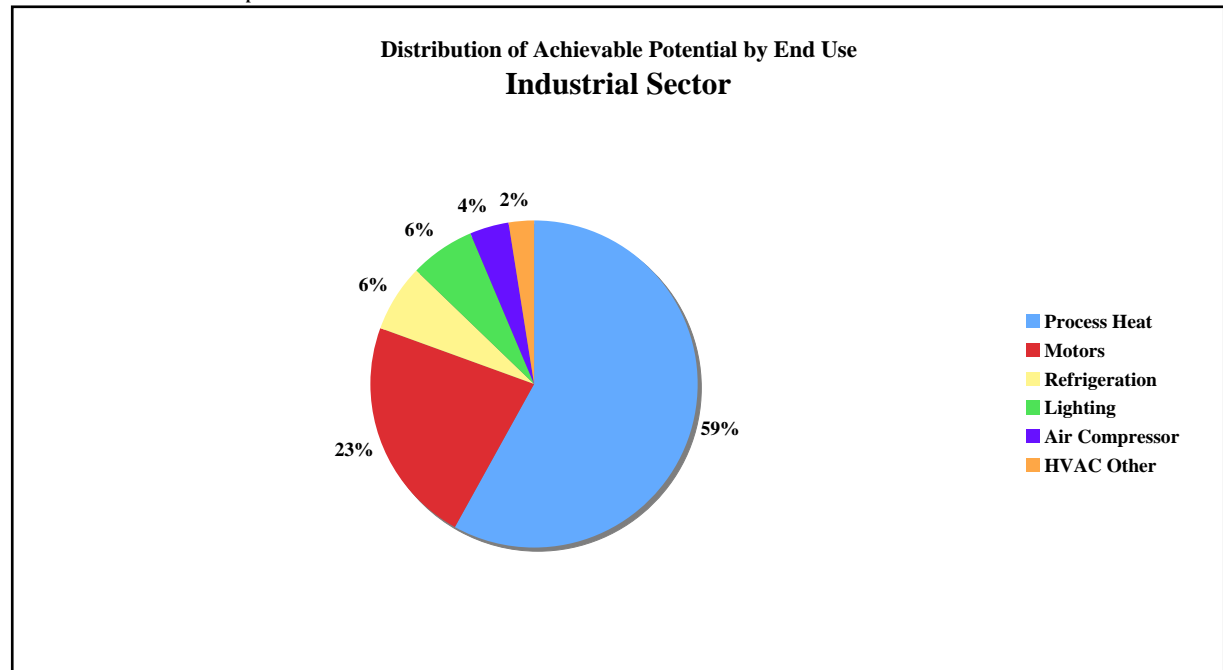
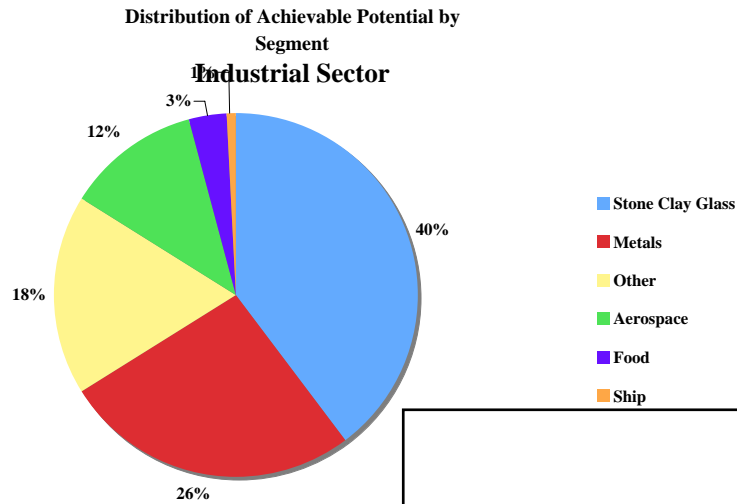
Distribution of Achievable Potential by Building Type  
Commercial Sector



Distribution of Achievable Potential by End Use  
Commercial Sector

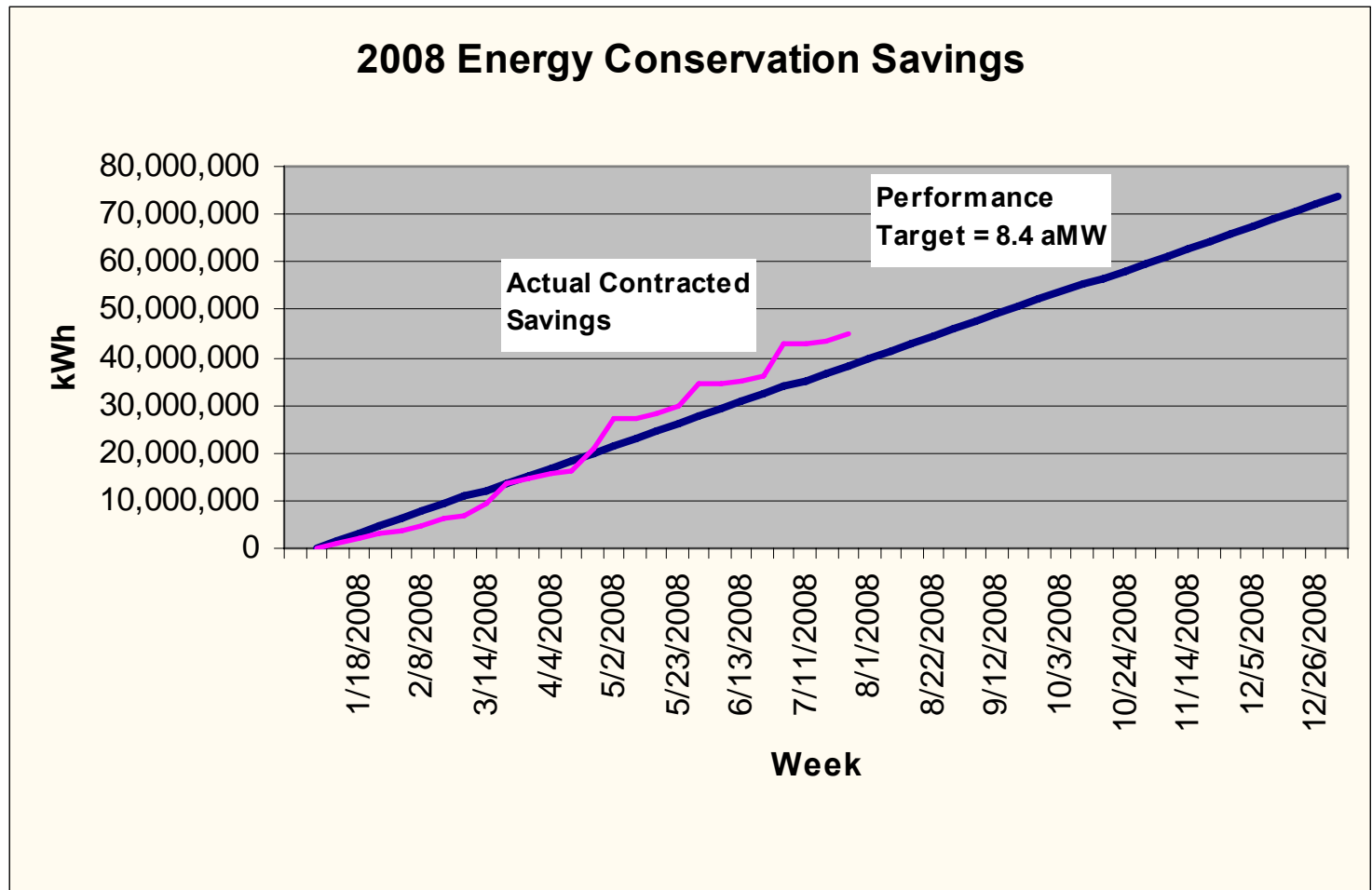


# Conservation Resource Potential Industrial Sector- 2006/07



# 30 Years of Conservation Success

*2008 Progress: 61% of Goal through July*



# 30 Years of Conservation Success

## *Recent Achievements*

Seattle Climate Action



SeattleCAN.org



# 30 Years of Conservation Success

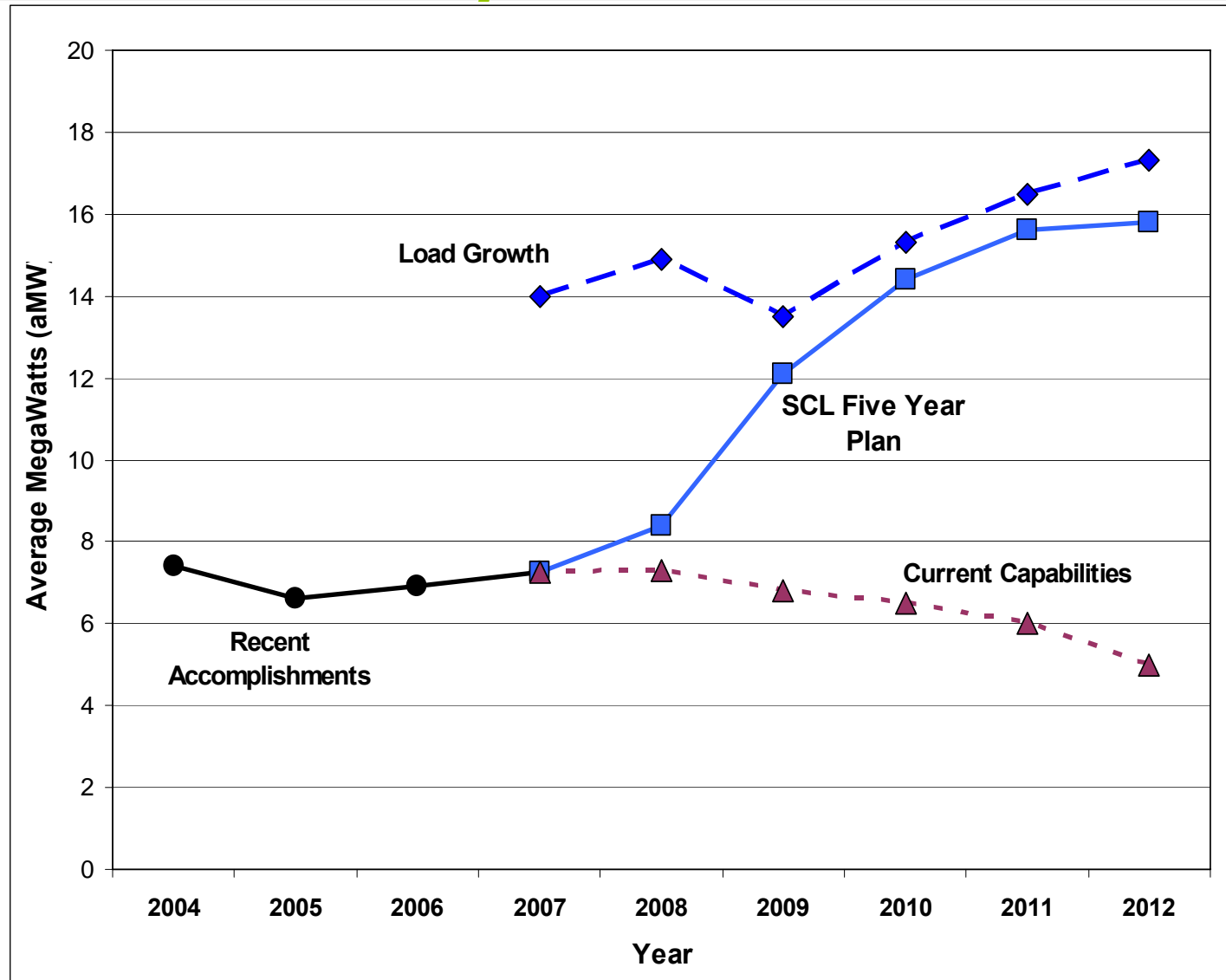
## *Proposed Five Year Plan*

***Rebuild*** the infrastructure

***Expand*** existing conservation programs

***Develop*** new conservation programs

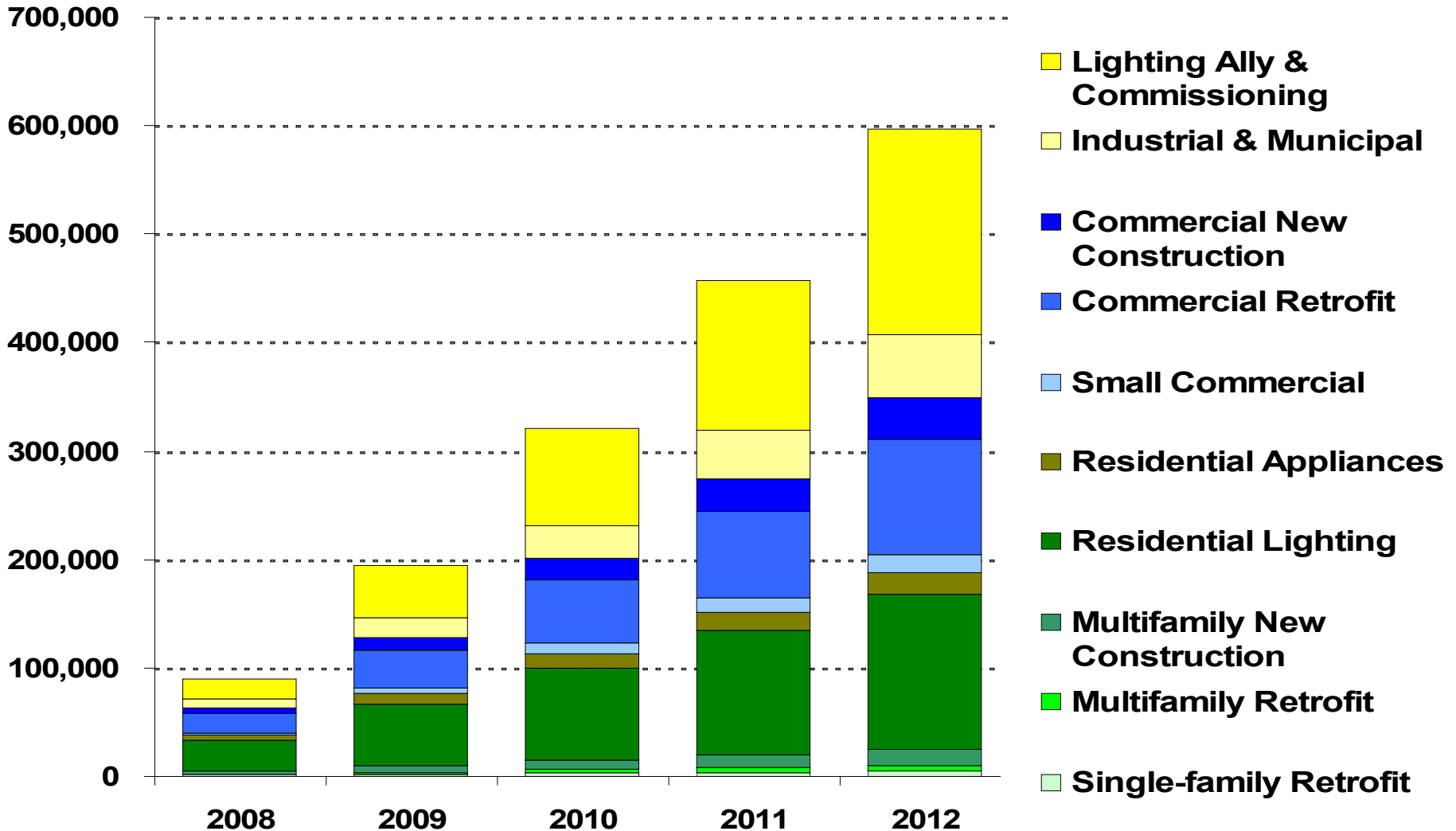
***Incorporate*** renewable energy and demand response



# Five Year Plan

## *Cumulative Energy Savings*

MWh Energy Savings by Program Accumulating Each Year



# Commercial & Industrial Sectors

## *Program Offerings*

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### Highlights:

- o 54% of budget, 69% of energy savings
- o Targeting entire range of customer types, sizes (new focus on medium)
- o Key end uses: lighting, HVAC (cooling and heating), industrial processes, data centers
- o Retrofit and new construction, with whole building approach
- o Program mix includes SCL-delivered, contracted and trade ally-focused
- o Financing for public and private sectors

# Commercial & Industrial Sectors

## *Existing Programs*

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<b>Program</b>	<b>Target</b>	<b>Savings</b>	<b>Delivery Method</b>
Energy Smart Services (ESS) Commercial Retrofit	Existing commercial buildings	16%	SCL Staff
ESS Commercial New Construction	New commercial construction	4%	SCL Staff
ESS Industrial Retrofit	Industrial processes	10%	SCL Staff
Smart Business	Small commercial lighting	3%	SCL Staff

# Commercial & Industrial Sectors

## *New Programs*

Program	Target	Savings	Delivery Method
New Commercial Whole Building	New commercial construction	3%	Contracted
Lighting Trade Ally Program	Commercial lighting	23%	Trade Allies
Smart Grocery	Grocery refrigeration	2%	Regional BPA/Contracted
Commissioning/ Retro-Commissioning	New construction and existing buildings	8%	Contracted (Resource Conservation Manager)
Energy Efficient Data Centers	Data centers, server farms	TBD	TBD
Public and Private Sector Financing	Sectors/markets where financing is barrier	TBD	TBD

# Residential & Mixed Use Sectors

## *Program Offerings*

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### Highlights:

- o 18% of budget, 31% of energy savings
- o Expanded range of offerings
- o Lighting most significant end use
- o Single and multifamily
- o Retrofit and new construction
- o Program mix includes SCL-delivered and contracted programs

# Residential & Mixed Use Sectors

## *Existing Programs*

<b>Program</b>	<b>Target</b>	<b>Savings</b>	<b>Delivery Method</b>
Built Smart	Multifamily new construction	2%	SCL Staff
Multifamily Retrofit	Existing multifamily buildings	2%	SCL Staff
WashWise Rebate	Efficient clothes washers	1%	Contractor; multi-utility collaboration
Twist & Save	Retail purchase of compact fluorescent lamps (CFLs)	22%	Contractor coordinating retail
Residential Lighting	Efficient lighting – CFLs and lighting fixtures	2%	Various methods
Refrigerator Recycling	Collection of operating second refrigerators	2%	Contractor
Neighborhood Power Project	One neighborhood per year	Platform	City staff, volunteers
Low-Income	Low-income single-family and multifamily residences	1%	Office of Housing through HomeWise program

# Residential & Mixed Use Sectors

## *New Programs*

<b>Program</b>	<b>Target</b>	<b>Savings</b>	<b>Delivery Method</b>
Retail Big Box	Retail purchase of efficient products	<1%	Contracted
In Home Monitors	Residential customer behavior	TBD	Initial pilot
Home Audits/Home Use Support	Residential customer behavior	TBD	Initial pilot
LEED for New Homes	Single Family New Construction	TBD	Contracted
Mixed Use New Construction	Mixed use new construction	<1%	SCL Staff

# Renewable and “Other”

## *Program Offerings*

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- No Energy Savings or Production Attributed to These in Cost-Effectiveness Analysis for Portfolio During Planning Period
- Customer-Side Renewables
  - Green Up and Green Power
  - Washington State Renewable Production Incentives
  - On-Site Renewable and Cogen (comm'l/industrial)
  - Small Scale Renewable (residential)
  - Home Power with Financing (tbd)
- Other “Programs”
  - Lighting Design Lab
  - Green Building Team support
  - Energy Code support
  - Northwest Energy Efficiency Alliance
  - SCL Infrastructure Efficiency Improvements

# Economics of The Five Year Plan

## *Portfolio Economic Analysis: Results*

*All savings delivered for less than \$35/Mwhr*

<b>Utility Program Perspective</b>	Dollars in Millions
Avoided Power (Benefit to Utility)	\$472.2
Program Costs (Costs to Utility)	\$217.3
Net Benefit to Utility	<b>\$254.9</b>
Utility Benefit/Cost Ratio	<b>2.17</b>
<b>Participating Customer Perspective</b>	
Customer Bill Savings (Benefit to Customer)	\$309.9
Customer Conservation Cost (Cost to Customer)	\$140.6
Net Benefits to Customer	<b>\$169.3</b>
Customer Benefit/Cost Ratio	<b>2.20</b>
<b>Service Territory Perspective (Total Resource Cost)</b>	
Avoided Power (Benefit to Service Territory)	\$472.2
Total Costs (Utility + Customer Conservation)	\$370.7
Net Benefit to Service Territory	<b>\$101.7</b>
Service Territory Benefit/Cost Ratio	<b>1.27</b>

30 Year Analysis – 2008 \$s (NPV)

# The Five Year Plan for Conservation

## *Additional Benefits*

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- o Greenhouse Gas – Avoided Emissions
  - o 990,000+ Metric Tons CO<sub>2</sub> avoided from 2008 to 2012  
(proportional with energy savings—0.6 metric tons/Mwhr)
  - o 219K cars garaged for a year
- o Additional Benefits: Potential Carbon Tax/Regulation (per CO<sub>2</sub> Tax Equivalent)
  - o \$5/ton = \$5.0 million over 5 years
  - o \$50/ton = \$50 million over 5 years
- o Green Jobs: 400-800
  - o Based on national studies range from 6-12 jobs per \$1M invested

# The Five Year Plan for Conservation

## *Near-Term Steps*

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- o Conservation Potential Assessment
  - o Update 2006 Version
  - o Complete draft by mid-2009
  - o Inform update of plan, I-937 regulatory target
- o Measurement & Verification (M&V)
  - o Conducting assessment to identify scope
  - o Hire independent contractor by year-end



Questions?

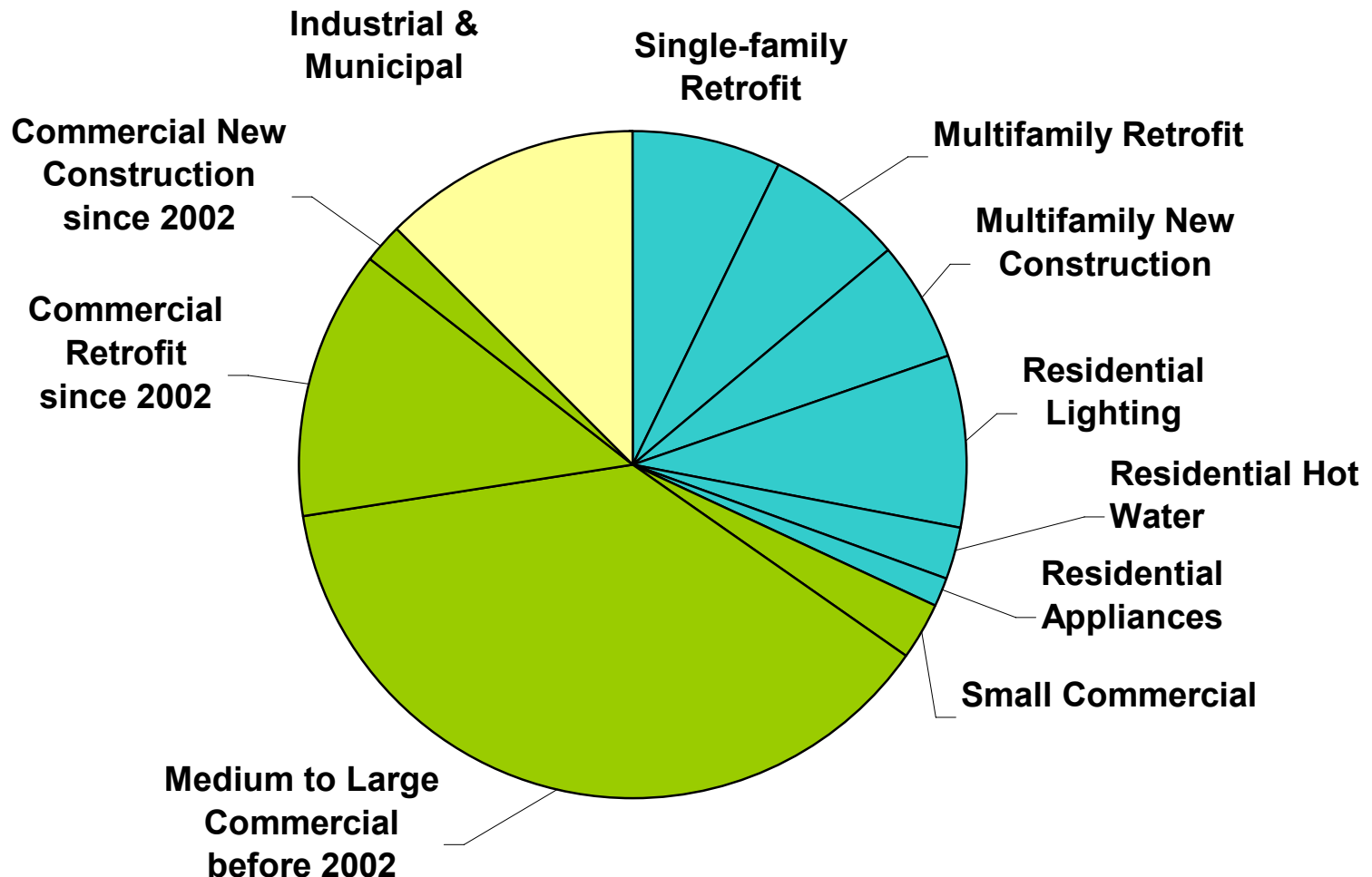
Seattle Climate Action  
**NOW**

 **Seattle City Light**

# 30 Years of Conservation Success

## *2007 Cumulative Energy Savings*

2007 Conservation Energy Savings (cumulative MWh)



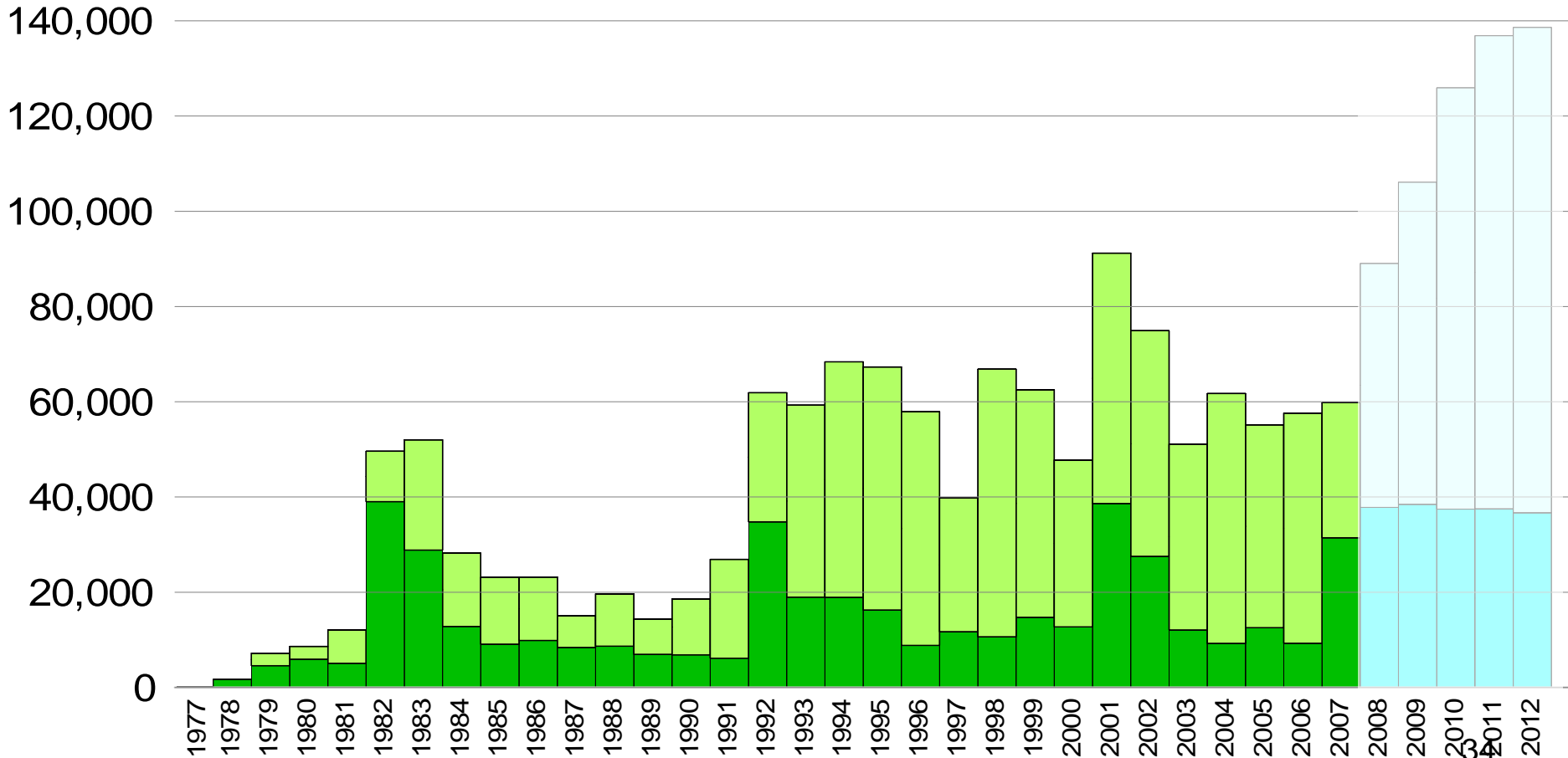
# 30 Years of Conservation Success

## *First Year Energy Savings from Projects*

Sector:

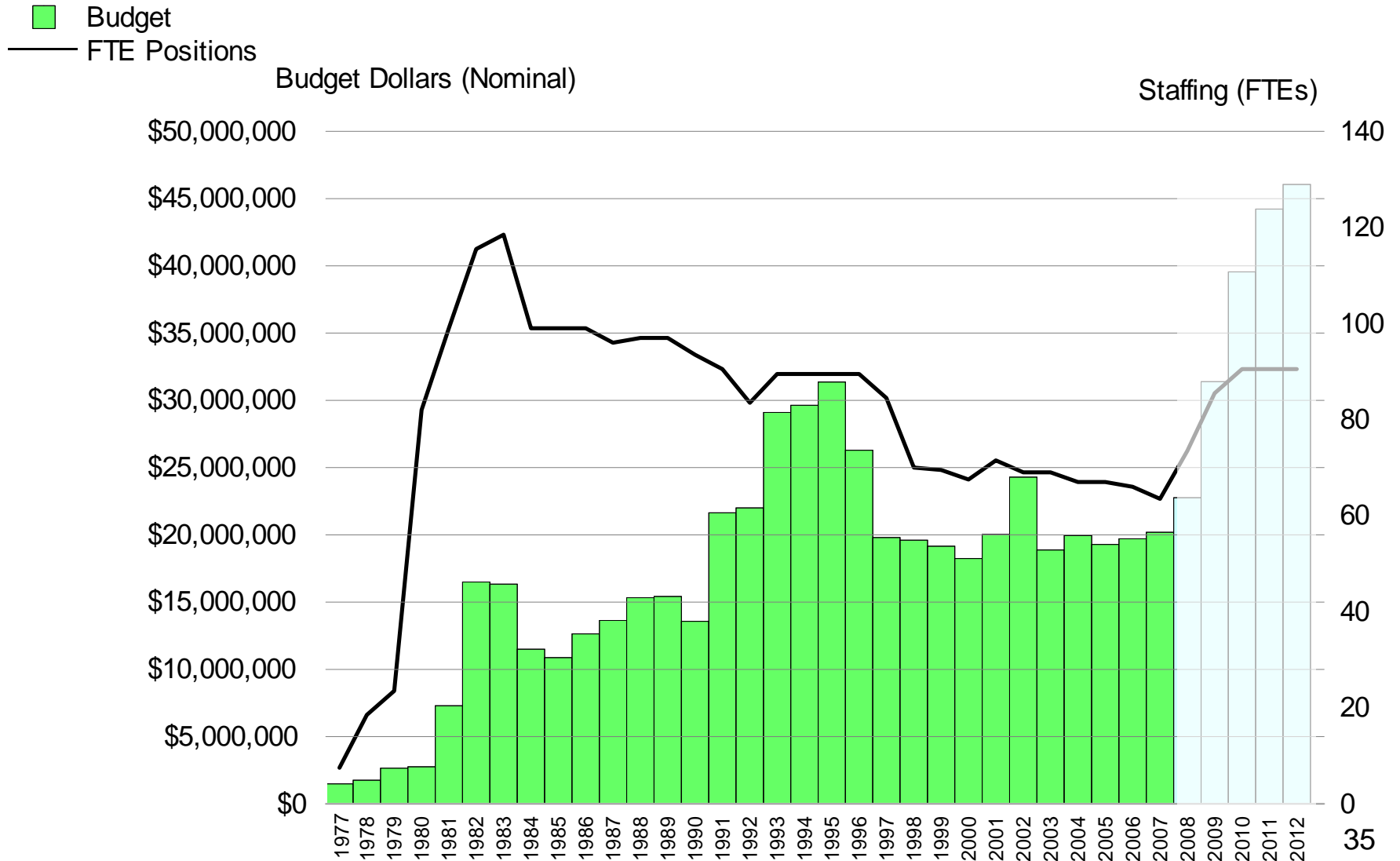
- Plan Commercial-Industrial
- Commercial-Industrial
- Plan Residential
- Residential

Megawatt-hours (MWh)



# 30 Years of Conservation Success

## *Staffing and Budgets*



# 30 Years of Conservation Success

## *Expenditures by Sector*

Conservation Expenditures in Year  
(Budget plus Overhead Loading)

Sector:

- Infrastructure
- Commercial-Industrial Plan
- Residential Plan
- Commercial-Industrial
- Residential

Nominal Dollars

