Designing and Implementing an Award-Winning Energy Management Program at the USPS

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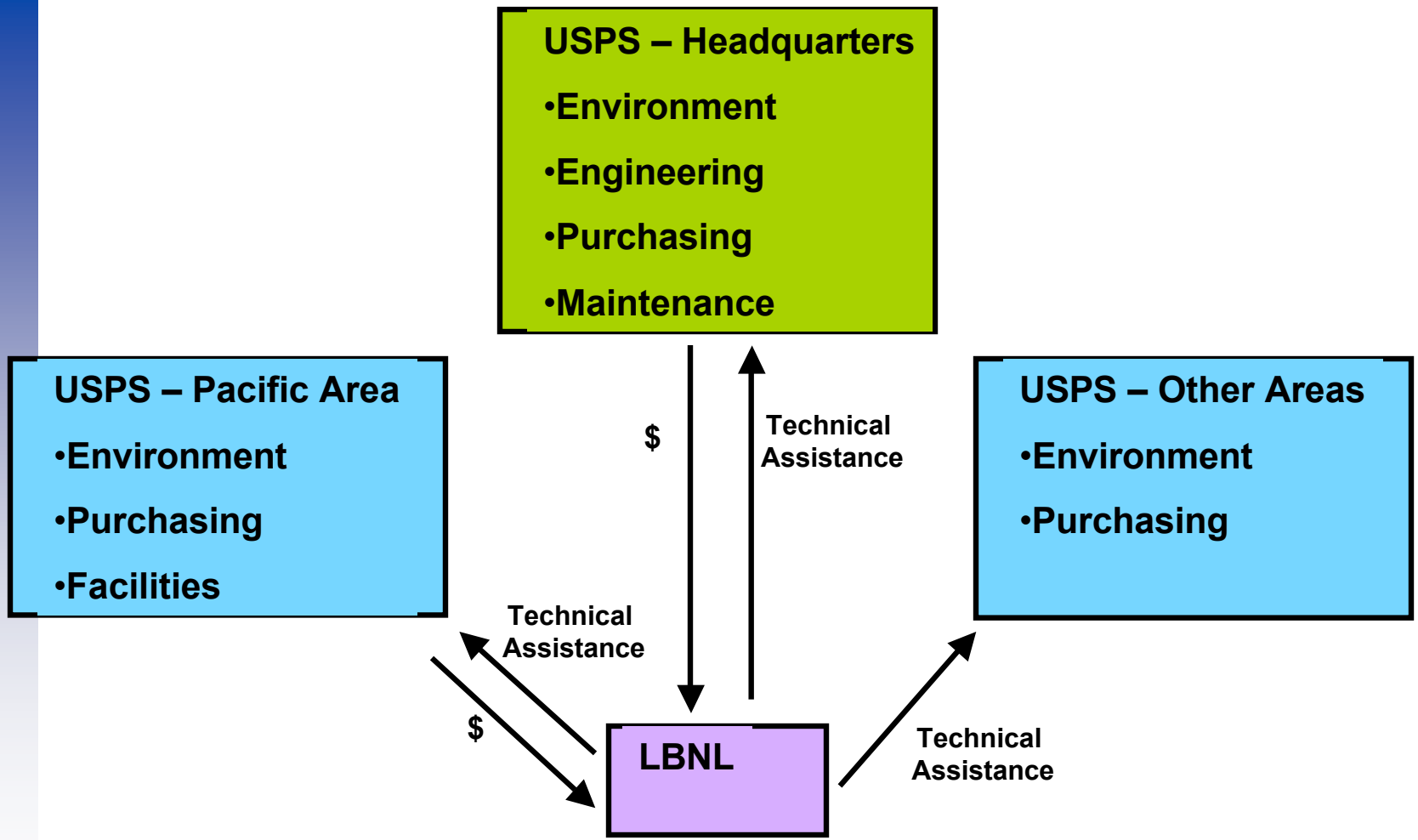
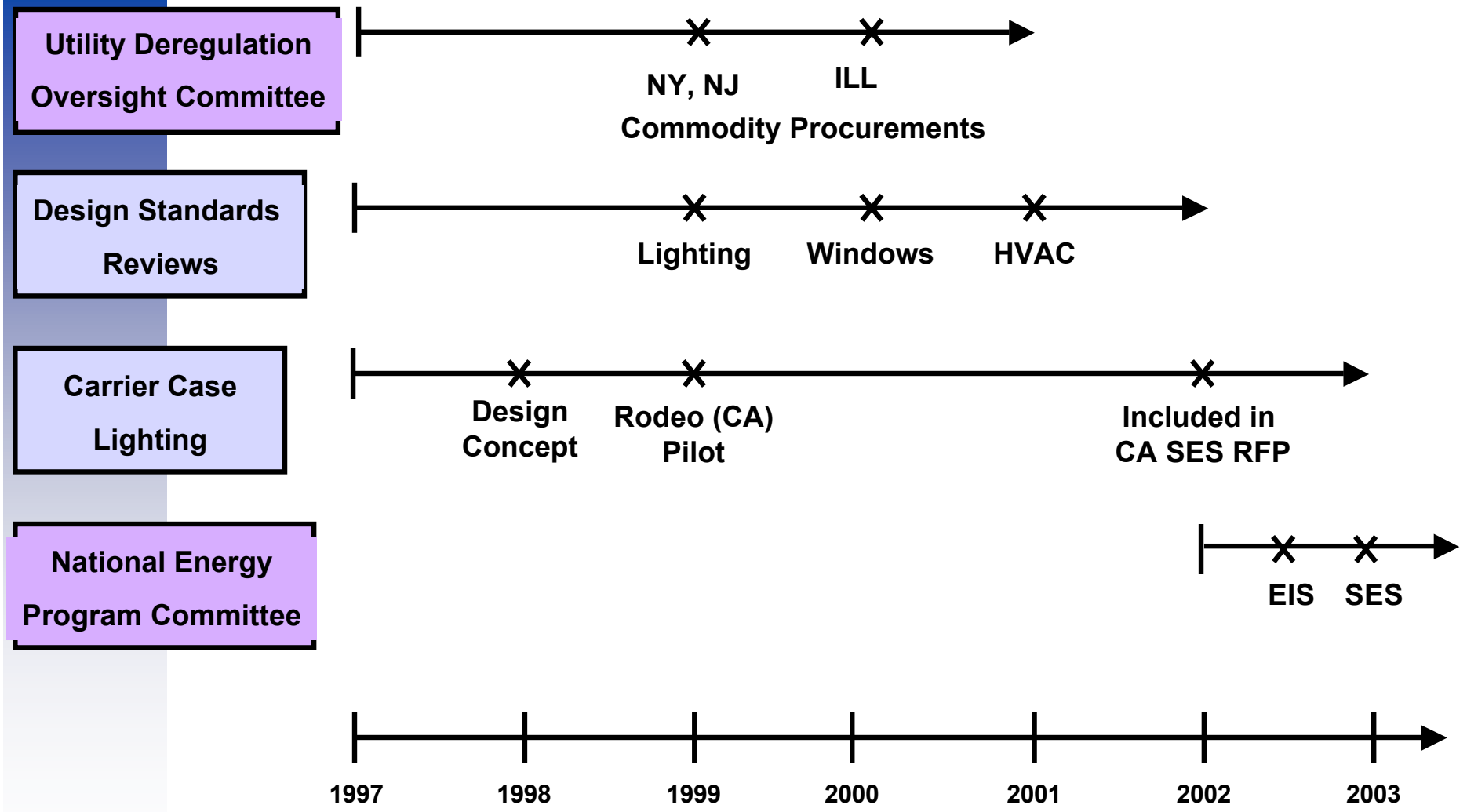
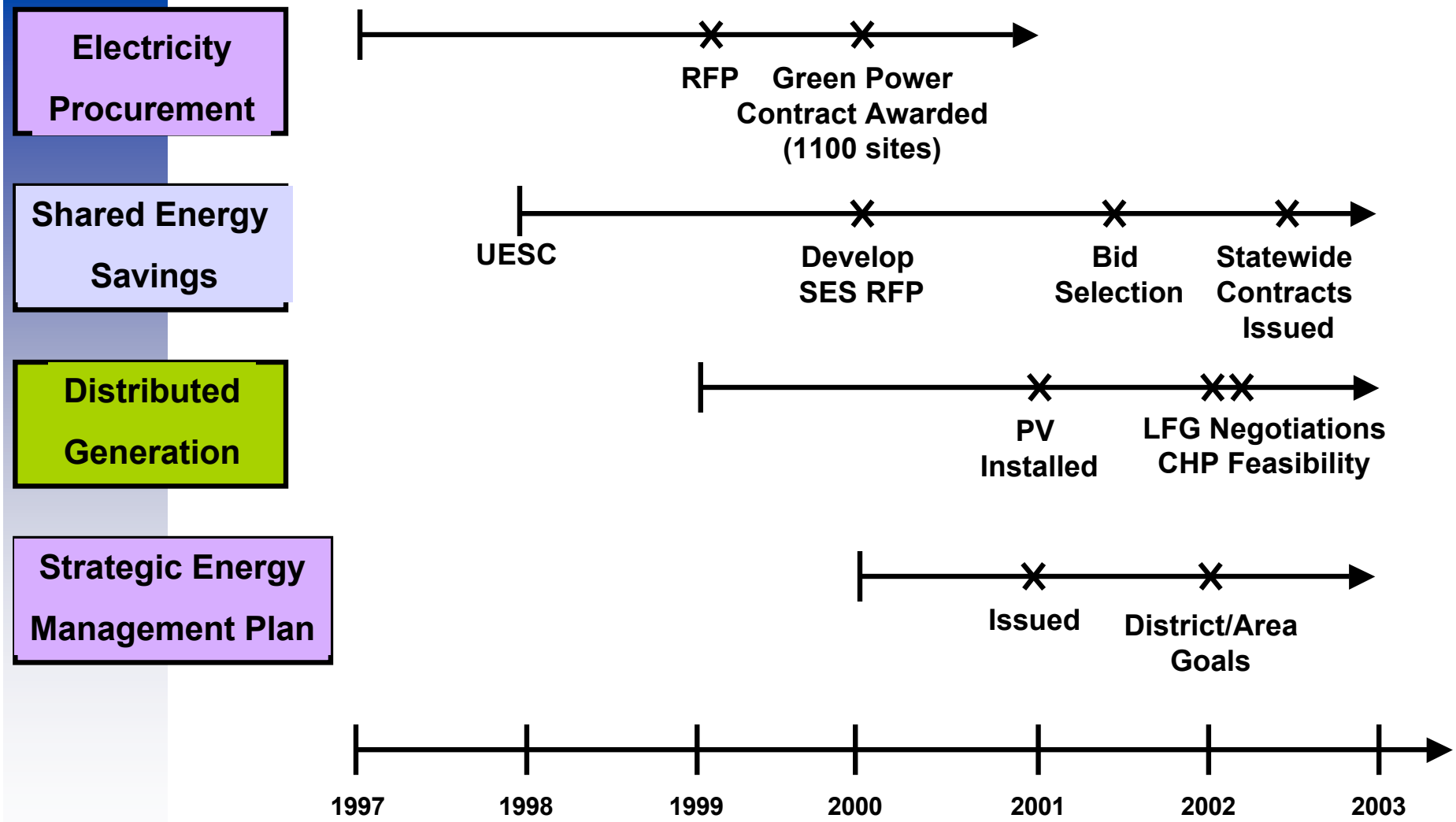
USPS/LBNL Functional Area Relationships



USPS National Activities



USPS Pacific Area Activities



Principle Obstacles to Success

- Initial expectations - $40 million in savings from competitive electricity markets in 1998 on total national electricity bills of $400 million
- The USPS/Enron golf course agreement
- 40,000 buildings
- Mis-aligned and inadequate authority (facility,district, area, hq)
- Lack of organizational home
- Lack of incentives/consequences
- Distrust of "contractors"/It's not "Postal"
- Turf issues
- Old facilities
- Last few years – no capital

Utility Shared Energy Savings (SES) Contracts

Utility SES

- Energy savings performance contract
- Sole source to utilities providing energy efficiency services

LBNL Role

- Technical and financial evaluation of project proposals
- Utility rebates/m&v requirements
- Buyout analysis
- Examples
  - Envest contracts (So Cal Edison)
  - PowerPact contracts (PG&E)
  - Las Vegas P&DC (Nevada Power)
  - Honolulu P&DC (Hawaiian Electric Co)

Competitive Shared Energy Savings Contracts

Competitive SES

- Competitively awarded (restructured states)
- Focus on technology cherry-picking (lighting, motors, motor controls only)
- Contracts awarded in 13 state area, but no projects completed

LBNL Role

- Conduct market research to determine reason for failure and suggest improvements for CA contract
- Technical and financial evaluation of contractor offers
  - Contracts awarded to Viron, now ChevronTexaco - NoCal; Honeywell - SoCal
- Technical and financial evaluation of project proposals
  - >$10M in projects awarded/completed; expected total >$70M over 4 year contract life

Distinguishing Features of USPS CA SES Contract

- Audit risks borne by ESCO
- Single ESCO per facility
- No "cherry-picking" – all technologies considered
- Performance risk borne by USPS
- Some key issues still being resolved
  - Use of savings in excess of 100% in a given year provided NPV is positive
  - Service level adjustments to baseline
  - Modeling out-year energy prices
  - Extend Delivery Order term to 25 years

Commodity Procurement

- Electricity procurement (CA, NY, NJ, IL, national)
- Green power procurement (CA, NY)
- Comprehensive energy services (national)

Purchasing Green Power in CA

- Creating realistic expectations of potential savings
- Developing senior management support
- Designing the solicitation
- Evaluating the offers and negotiating with potential suppliers
- L'Affaire Enron
- Offer lost in a merger
- Awarding a contract – 100% renewable, ~1100 sites, no price premium (~4aMW)
- Then-largest federal green power purchase

Developing a PV Demonstration Project

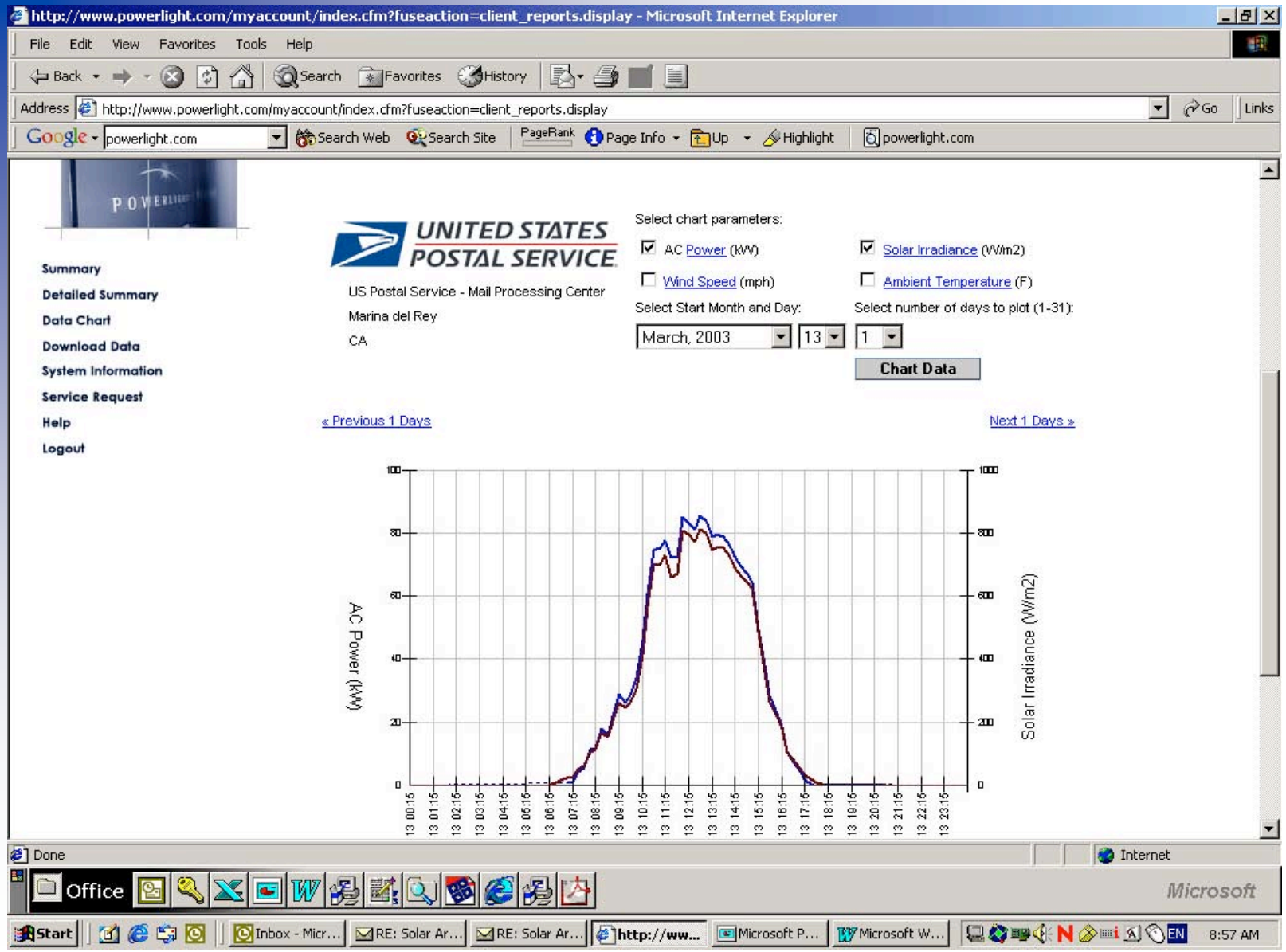
- FEMP DER grant of $125k received on the basis of original plan – 4 sites @ 25kW
- Conducted market research
  - Price: $9 – 9.50/W @ 25kW; $8.50/W @ 100kW
  - Rebates: CEC - $4.50/W up to 50%; LADWP - $5/W, no limit, manufactured in LA (lower for other products)
- Non-competitive procurement approved – PowerLight PowerGuard product
  - No roof penetration
  - Manufactured in LA – higher rebate
- Site Selection
  - LADWP rebate program
  - Tariff, roof, site cooperation
  - 3 candidate sites
- Use of expense funding approved for 100 kW

Developing a PV Demonstration Project (cont.)

- LADWP increased rebate to $6/W
  - PowerLight increased size to 127W (nameplate)
  - Rebate $684,000 (based on 114kW actual)
- Cost to USPS: $225,000
  - 9 year ROI
- LADWP self-gen tariff substantially increased benefits
  - 7 year ROI
- System included Data Acquisition System and Solar Load Controller
- Led to newly-approved 400kW system in W. Sac.

127 kW Nameplate PV System at USPS Marina Processing & Distribution Center

PV Data Acquisition System



Favorable Recognition for the Client

David Wiggs,
Ageleina Galiteva,
LADWP

Gord
Handelsman
Siemens Solar

Debra Bowen,
State Senator

Dan Shugar
PowerLight

Winston Hickox,
Secretary,
CalEPA

Ruth Galanter
LA City Council

Beth Shearer
Director, FEMP

Design Assistance

- Comprehensive Review of USPS Construction Design Standards
  - Recent request from USPS Facilities Department
  - Earlier reviews not influential
- Development of Large Facility Lighting Design Guide
- Development of Small/Medium Facility Lighting Design Guide
- Proposed Santa Monica Green Building
- Technology case studies
  - Compressed Air
  - Carrier case lighting

Operations and Maintenance

- Pacific Area tele-metering and demand response program
  - Installation of energy information and demand response systems at 24 CA large facilities
  - Sole sourced to Viron Energy Services (now ChevronTexaco)
  - Funded entirely by CEC grant ($1.2M)
- National tele-metering program
  - Developing technical specifications and business case

Tele-metering: Building a Business Case

- Establish baseline technologies/services
- Determine incremental investment required
- Evaluate sources of potential benefits (high/medium/low cases)
  - More effective electricity and gas commodity procurements
  - Improve facility operations & maintenance (O&M)
  - Improve energy efficiency retrofit project design
  - Tariff analysis
  - Reduce utility billing errors
  - Evaluate potential from economic demand response (programs and/or prices)
  - Evaluate potential from participation in demand response programs (grid emergency)
- Calculate return on investment

Lighting

- Lighting technology design ("Rodeo" or carrier case fixture)
- Lighting design guides
  - Retail operations
  - P&DCs
- Berkeley Lamp test-bed

Direct Financial Benefits

- Tariff analysis - $200K refund from SDG&E for overbilling
- CEC grant - $1.2M for demand response system
- LADWP rebate - $684K for Marina PV system
- FEMP grant - $125K for Marina PV system
- PG&E Self-Gen Incentive Program rebate - ~$2M for W.Sacto PV system
- Various smaller utility rebates

The Strategic Energy Management Plan

- Heart of the energy program
- Defined organizational structure, responsibilities
- Senior management support
- Established goals
- Tools provided
- Reporting incorporated

PACIFIC AREA ENERGY PROGRAM COMMITTEE

STRATEGIC ENERGY MANAGEMENT PLAN

FY 2003 – FY 2005

OCTOBER, 2002

UNITED STATES POSTAL SERVICE

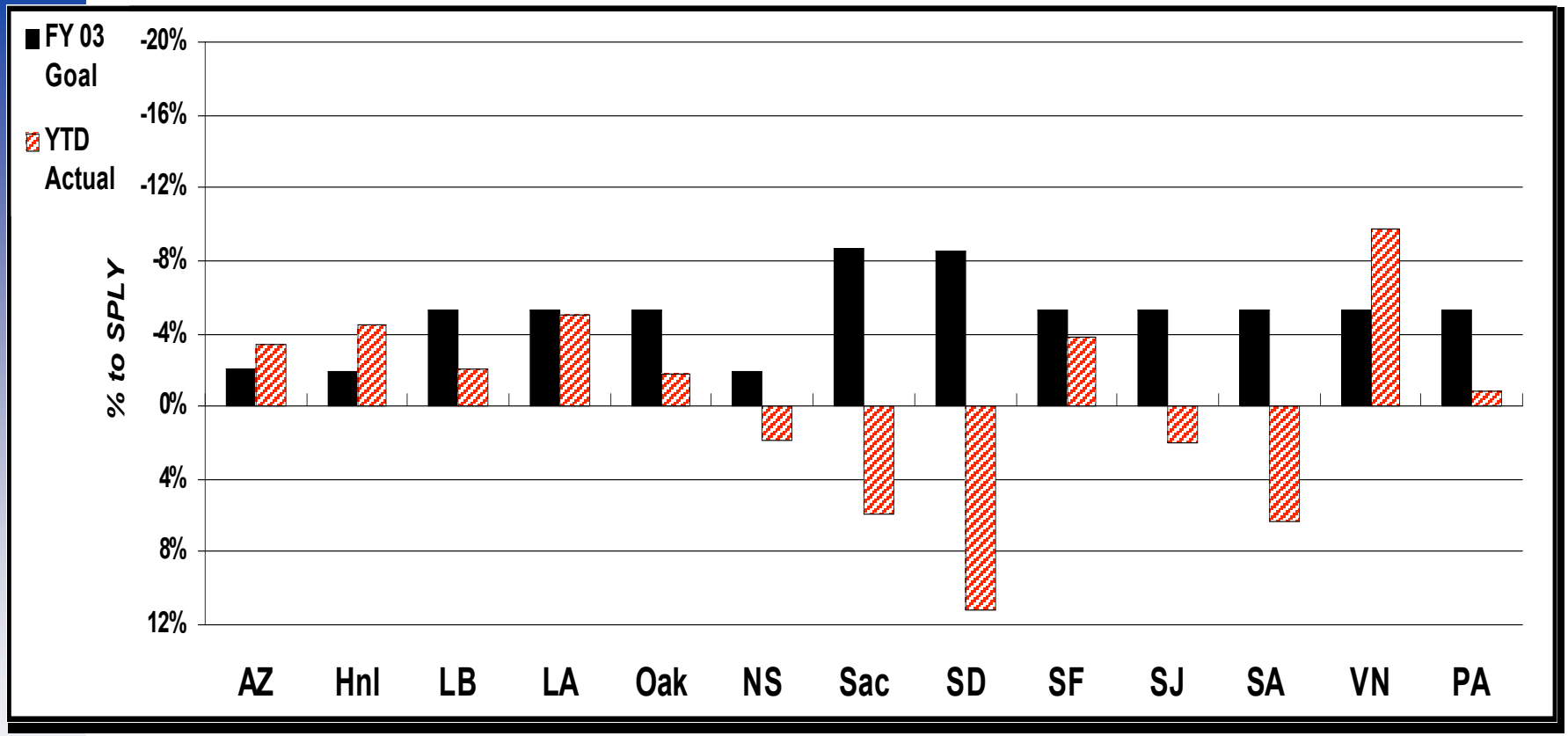
Energy Consumption Tracking Database

Site Info	Year	October		November		December		January	
		Gas Therms	Electric Kwh	Gas Therms	Electric Kwh	Gas Therms	Electric Kwh	Gas Therms	Electric Kwh
San Diego Cluster									
San Diego MLS P&DC	FY '03	30,047	3,444	25,042	3,837	38,054	4,120		
11251 Rancho Carmel Rd	FY '02	2,091	3,632	8,804	3,824	32,795	4,569	25,046	4,309
San Diego, CA 92199-9998	FY '01	31,465	3,715	33,492	3,918	54,160	4,495	35,651	4,378
05-6770-G01	FY '00								
654,000	FY '99								
San Diego MLS P&DC	FY '03		1,237,479		1,149,433		1,232,834		1,237,479
11251 Rancho Carmel Rd	FY '02		1,268,789		1,238,525		1,310,071		1,259,956
San Diego, CA 92199-9998	FY '01		1,216,056		1,229,700		1,272,324		1,224,759
05-6770-G01	FY '00								
	FY '99								
San Diego Midway P&DF	FY '03	55	59,602	275	51,169	478	54,773		
2535 Midway Drive	FY '02	26	64,310	86	57,062	1,109	53,849	1,542	54,367
San Diego, CA 92199-9997	FY '01	69	52,800	426	42,240	1,482	42,080	1,088	44,960
05-6771-G03	FY '00								
481,900	FY '99								
(Includes VMF, CFS & Plant)									
San Diego Midway P&DF	FY '03	8	655,914	6	590,326	70	609,518		
2535 Midway Drive	FY '02	8	717,422	10	619,300	91	596,274	127	617,004
San Diego, CA 92199-9997	FY '01	14	766,078	20	608,738	52	585,862	128	641,402
05-6771-G03 Annex, CFS, CU, EAF	FY '00								

Energy Consumption Goals

	FY 85	FY 01	FY 02		FY 03		FY 04		FY 05	
	Actual	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual
Arizona	**91.3**			**86.9**	**85.2**		**80.7**		**73.8**	
Honolulu	61.1	74.0	**69.7**	73.5	**72.1**		**68.3**		**62.4**	
Long Beach	68.2	71.5	**67.4**	68.3	**64.7**		**61.2**		**57.9**	
Los Angeles	72.6	73.2	**66.3**	76.4	**72.3**		**68.5**		**64.8**	
Oakland	75.9	70.5	**68.3**	69.5	**65.8**		**62.3**		**58.9**	
Nevada Sierra	**74.1**			**115.5**	**113.2**		**107.2**		**98.0**	
Sacramento	74.9	79.5	**74.9**	79.9	**73.0**		**69.1**		**67.8**	
San Diego	67.3	80.8	**76.1**	81.9	**74.9**		**70.9**		**69.5**	
San Francisco	66.3	76.3	**71.9**	70.3	**66.6**		**63.0**		**59.7**	
San Jose	77.8	97.9	**91.6**	93.4	**88.4**		**83.7**		**79.2**	
Santa Ana	64.7	63.0	**59.7**	64.8	**61.4**		**58.1**		**55.0**	
Van Nuys	75.1	87.2	**81.8**	85.5	**80.9**		**76.6**		**72.5**	
Pacific Area	**72.2**	**74.6**	**72.1**	78.3	**74.2**		**70.2**		**66.5**	

Energy Consumption Reporting



Key Success Factors

- Meeting the people/learning the culture
- Finding a champion
- Focusing on the needs of the USPS
- Gaining recognition for the client (press coverage, awards, etc)
- Bringing supplemental resources (FEMP co-funding, state/utility rebates, etc)
- Patience and persistence/navigating roadblocks
- Gaining credibility/delivering the goods
- Striking when the iron is hot
- Looking for opportunities
- Picking your battles (and your timing)

Energy Program Awards

- DOE Federal Energy and Water Management Award (2003, 2000)
- CA Governor's Environmental and Economic Leadership Award (1999)
- Federal Energy Saver Showcase (2002)
- EPA Champion of Green Government Award (2002)
- "Honorable Mention" USEPA Green Power Leadership Award (2000)
- Presidential Award for Leadership in Federal Energy Management (2003)