

Pacific Coast Demand Response and DG Programs

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Some Things Tried, and Some Things Abandoned

- Portland General Electric Dispatchable Standby Generation Program
- Portland General Electric (and others) Peak Buy-Back Programs
- Puget Sound Energy TOU Pilot Post-Mortem
- Burbank Water and Power TOU Program Experience



Portland General Electric Dispatchable Standby Generation

- Uses existing standby generators at hospitals, sewage treatment plants, office buildings and other facilities.
- All standby generators over 250 kw are eligible.
- PGE installs switchgear and synchronization.
- PGE monitors and dispatches units via SCADA
- PGE Installs additional fuel storage if needed
- 30 MW in place; 70 MW additional potential



PGE Dispatchable Standby Customer Benefits

- PGE handles all maintenance
- Customer pays PGE retail rates, regardless of whether standby is operating
- No fuel management responsibility
- PGE tests units regularly
- Because units are dispatched when system under stress, and owners have first call on power from DSG units, the likelihood of disruption of service is reduced.



PGE Dispatchable Standby Environmental Effects

- PGE uses only transportation grade diesel; sulfur emissions are reduced.
- PGE installs oxidation catalysts to reduce CO and HC (and odor).
- PGE installs additional sound isolation
- PGE is exploring dual-fueling for standby units with natural gas (startup on diesel, switch hot). Significant potential CO₂, NO_x and CO reductions.



PGE Demand Buyback

- Borne during the 2000-2001 Power Crisis
- Applies to customers on fixed-price tariffs (some on TOU, some not).
- Customers must have ability to shed at least 250 kW
- If a buyback event is declared, customers receive a market-based credit (market minus tariff rate) for all load shed. Lower for TOU customers.
- Similar programs implemented for Puget, Avista; now largely dormant. PGE is more resource challenged.



PGE Peak Buyback Calculation of Credits

- **Market Energy Price – Rate Schedule Price = Hourly Credit Rate (¢/kWh)**
- **Buy Back Amount (kWh) X Hourly Credit Rate = Hourly Credit**
- **Partial credit paid if a buyback event is announced and then cancelled. \$.07 for 2-hour notice down to \$.035 for 4-6 hour notice.**



Puget Sound Energy TOU Pilot Program

- Much-heralded 300,000 customer pilot program 2001-2003
- Dumb meter / smart network system
- Very Complex Rate Design
 - 4 TOU Periods
 - 2 Seasons
 - Inverted Block Rate (credit for first 600 kWh, regardless of TOU period)

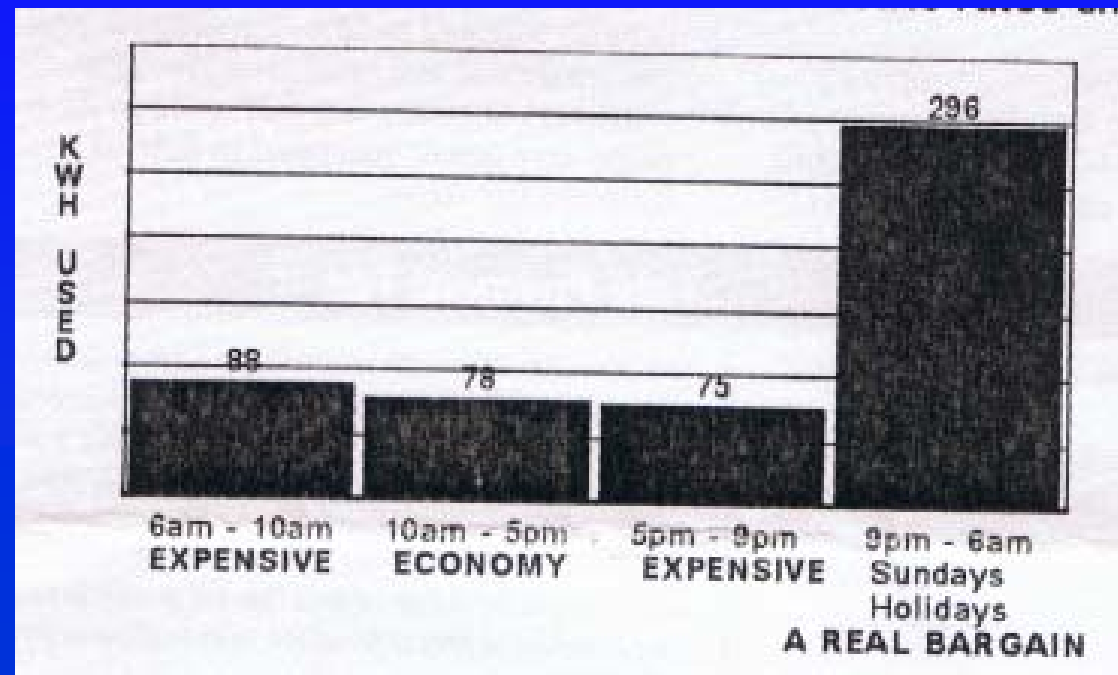


Puget Sound Energy TOU Pilot Initial Rate Blocks

➤ Rate Design (Initially):

- 6 A.M. – 10 A.M. \$.086
- 10 A.M. – 5 P.M. \$.077
- 5 P.M. – 9 P.M. \$.086
- 9 P.M. – 6 A.M. \$.069

➤ Customers received graphic bills:





Puget Sound Energy TOU Pilot Changes Implemented 7/1/02

- TOU rate blocks compressed to reflect \$7/mWh on-peak off-peak market differential
- \$1.00/month participation fee added to cover incremental data handling costs
- Quarterly reports to consumers required showing net savings.
- 86% of customers paid more – the \$1.00 participation fee swamped the TOU savings.



Puget Sound Energy TOU Pilot The First Quarterly Report

- Puget had marketed the program as offering “big savings.”
- PSE executives viewed it as an alternative to conservation programs.
- First quarterly report showed that 94% of customers were paying more with TOU;
- Biggest savings = \$15.78; Biggest increase = \$6.46
- In response to litigation risk, PSE requested termination of the program, and refunded all excess costs to customers.



Puget Sound Energy TOU Pilot Evaluation Results

- Customers did shift load – on the order of 2%-5%
- Marginal generation, transmission, and distribution capacity costs accounted for.
- Cost to customer to achieve the load shift and load curtailment (welfare loss) included in some scenarios.
- Incremental cost of metering and billing included.



Puget Sound Energy TOU Pilot Evaluation Results

Summary of Cost-Effectiveness Results Comparison Table

Present Value Net Benefits (\$ millions) (over 10 years)

	TRC Test	Participant Cost Test	RIM Test
Commission Staff Base Scenario (04/23/03)	-\$10.60	-\$17.59	\$5.56
Public Counsel Base Scenario (04/25/03)	-\$6.73	-\$5.30	-\$0.68
Puget Sound Energy Historic Period Scenario (04/24/03)	-\$1.78	-\$2.41	\$0.47
Puget Sound Energy Future Period Scenario (04/24/03)	-\$10.19	-\$10.44	-\$3.96

Footnote to table: Negative numbers indicates that costs exceed benefits, positive numbers indicate that benefits exceed costs.



Press Coverage at End of TOU Pilot Program

State regulators are expected today to cancel the once-popular billing program that urged Puget Sound Energy's electricity customers to shift most of their energy use to late nights and Sundays.

Customers besieged PSE, calling to complain that the utility's "time-of-use" program not only wasn't saving them money but also was costing them slightly more than standard billing programs. So PSE last week asked the state Utilities and Transportation Commission for permission to end the program a year ahead of schedule.

» Seattle Post-Intelligencer, Nov. 15, 2002



City of Burbank Contract TOU Customers

- Largest customers (Warner Brothers, NBC) placed on TOU contracts in 2000-2001.
- Rates have \$17/kW demand charge applying to priority peak period (~90 hrs/month), plus 2:1 on/off energy charge ratios. Similar to SCE/PG&E
- Effective rate is \$.25/kWh on-peak, \$.07/kWh off-peak.



City of Burbank Contract TOU Customers

- Measured Load Shift:
 - Significantly less than 1% shift of energy use from on-peak to off-peak periods
- Expected investment in energy storage systems did not materialize
- Evidence is that energy costs are trivial in comparison to other costs of business.
- Very short time horizon for investment.
- Burbank directly subsidizing energy storage system at hospital.



References

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