

NM Recycled Energy in Action

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Background

- SWRP – 76MGD Design, 120 Peak
- Largest WW facility in NM
- Serve over 500,000 people
- Activated Sludge/UV Disinfection

Anearobic Digestion

- Used for stabilization of biosolids
- Content of biogas
 - ~65% CH₄
 - ~25% CO₂
- 600 BTU/ft³

$$V_{\text{CH}_4} = (0.35) [(S_o - S) Q (10^3 \text{g/kg})^{-1} - 1.42 P_x]$$

Crude estimate is ~1.0ft³/person/day

Cogen History

- South Cogen installed Feb 1987
 - 2 Cooper Superior 12 GTLA's at 1.1 MW each
 - Coupled to Cato Generators
 - Heat Rate ~14,000 (digester gas)

- North Cogen installed November 2002
 - 2 Caterpillar G3612's at 2.2 MW each
 - Coupled to Cato Generators
 - Heat Rate ~8500 (natural gas)

Typical Load Demand (MW)

Average Plant Demand = 4.5

Avg. Digester Gas Generation = 1.6

Balance to be made or purchased = 2.9



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Water Utility Authority

Gas - Electric

Electric Fees

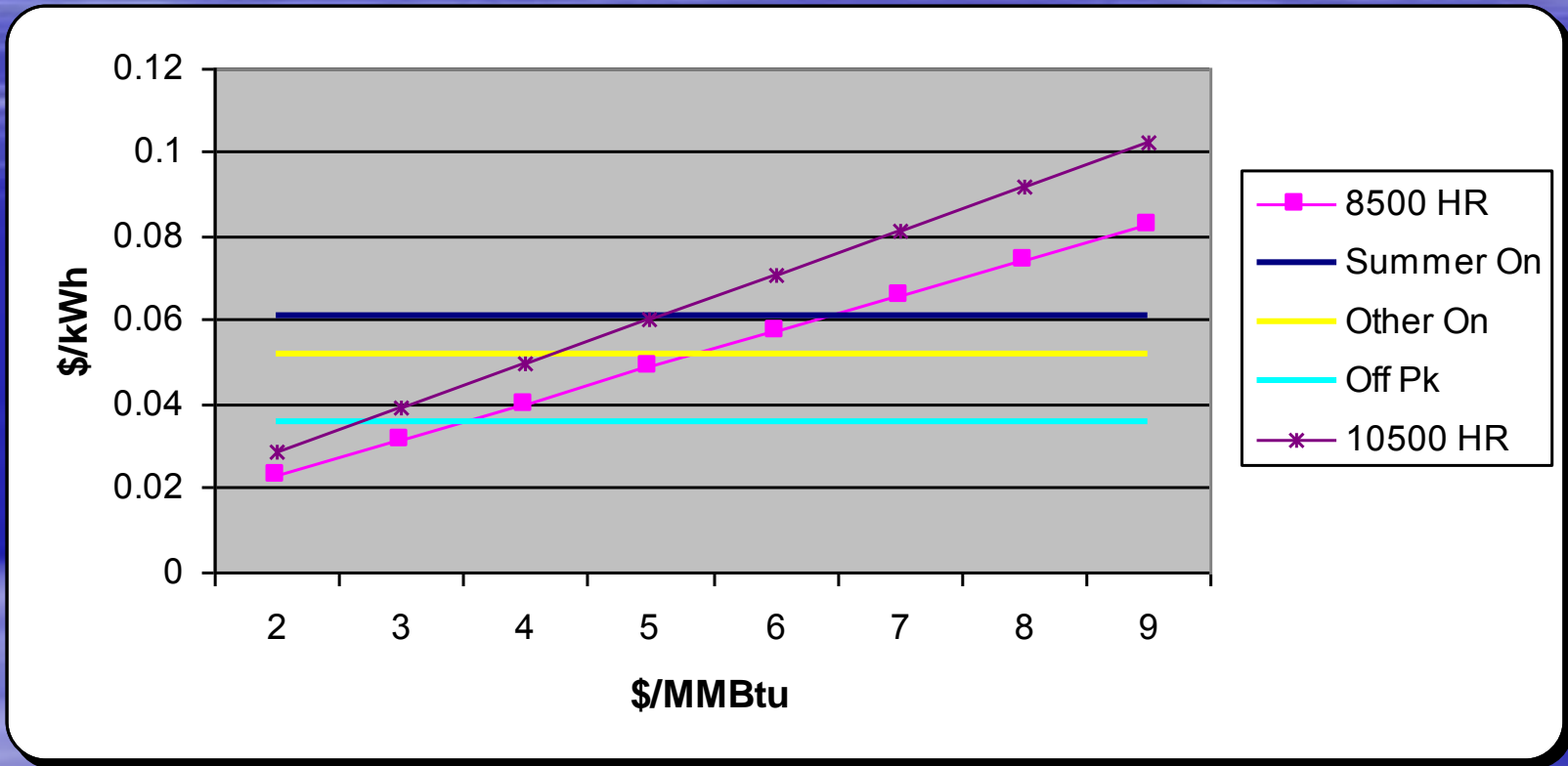
- Customer Charge
- Demand Charges
- Energy Charges
- Facilities Charge
- Reservation Fee
- Backup Power Penalty
(>5.0MW)

Gas Fees

- Contracted through Wasatch
- San Juan IFERC + \$0.04
- 1% Fuel
- Cogen Op exp ~\$521k (avg last 3 yrs)

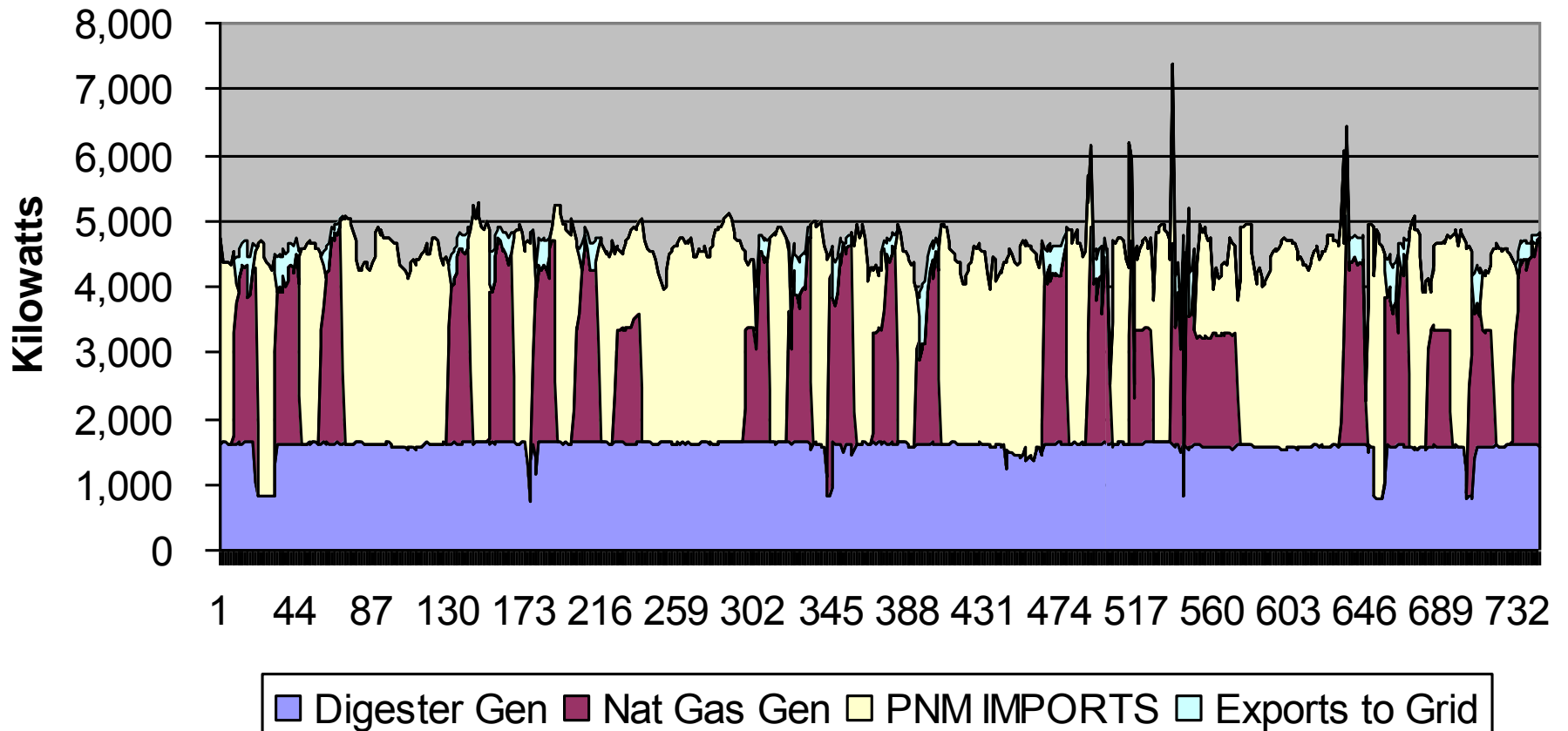


Break Even Analysis



Typical Demand Profile

SWRP Power Demand Oct 2008 (Hourly)



Critical Loads

- Total Critical Load = 3.94 MW

Critical Power Requirements

	# units on	kw trend	Total kW
North Blowers (NRF - 4)	3/4	200	600
South Blowers (NRF - 8)	6/8	250	1500
activated sludge pumps (4)	4/4	250	1000
Digester Mixers (44)	28/44	30	840
Total			3,940

PNM Peak Saver

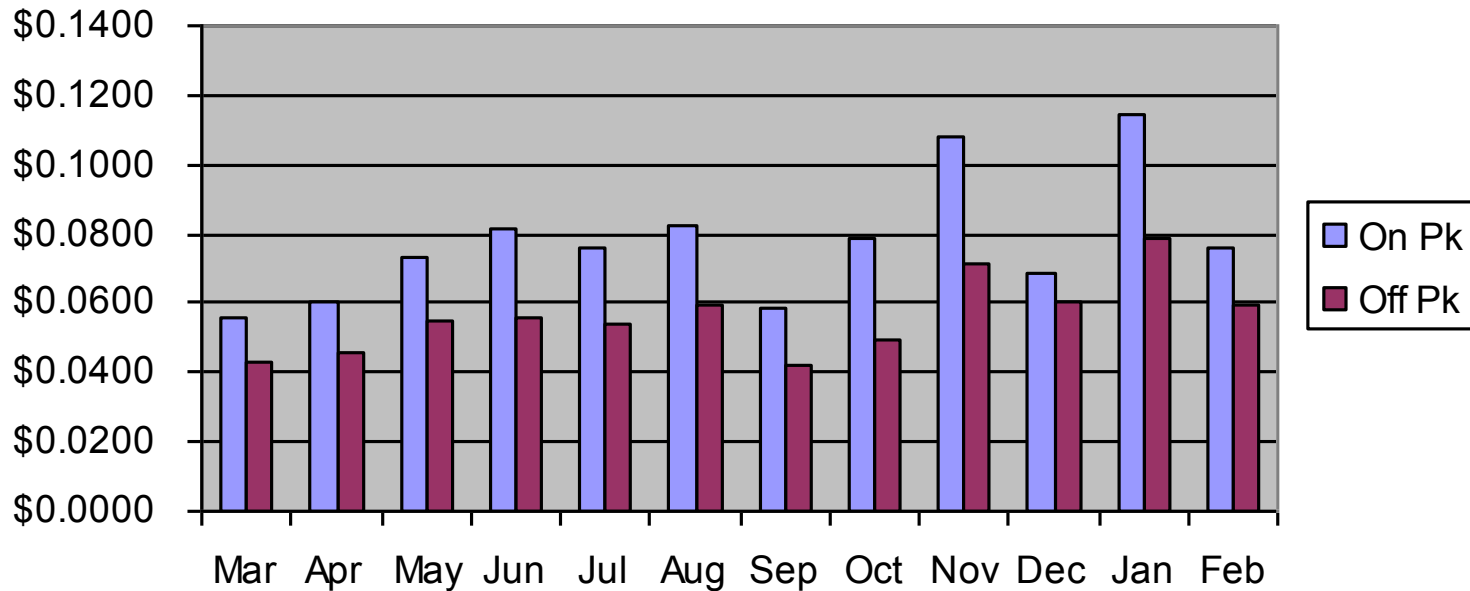
- Demand Response program
- Helps PNM balance supply-demand
- Contracted with EnerNOC to run program
- Voluntary program – can terminate anytime



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Buy Back Rates

March 09-Feb10

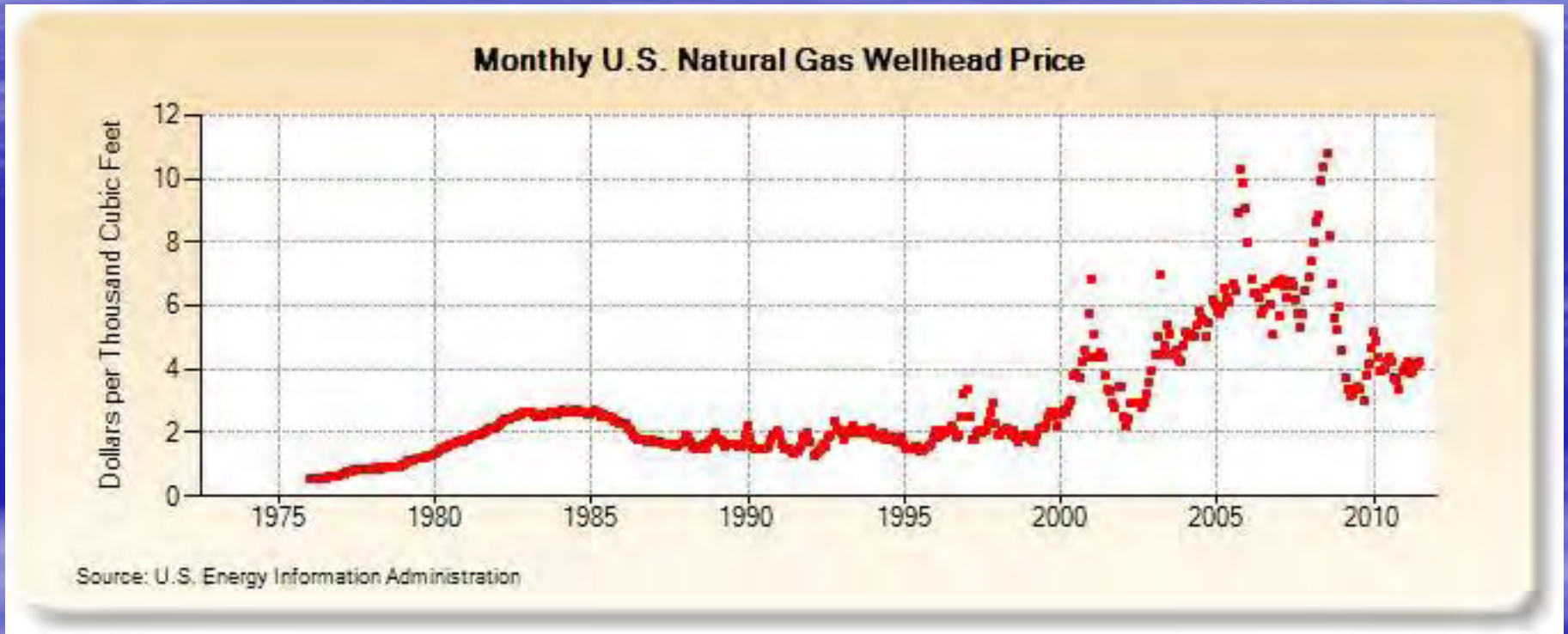


O+M Costs

- ~ 500k/year
- Cat Major overhaul ~250k
- Cooper major overhaul ~150k
- Plan for 1 major overhaul per year



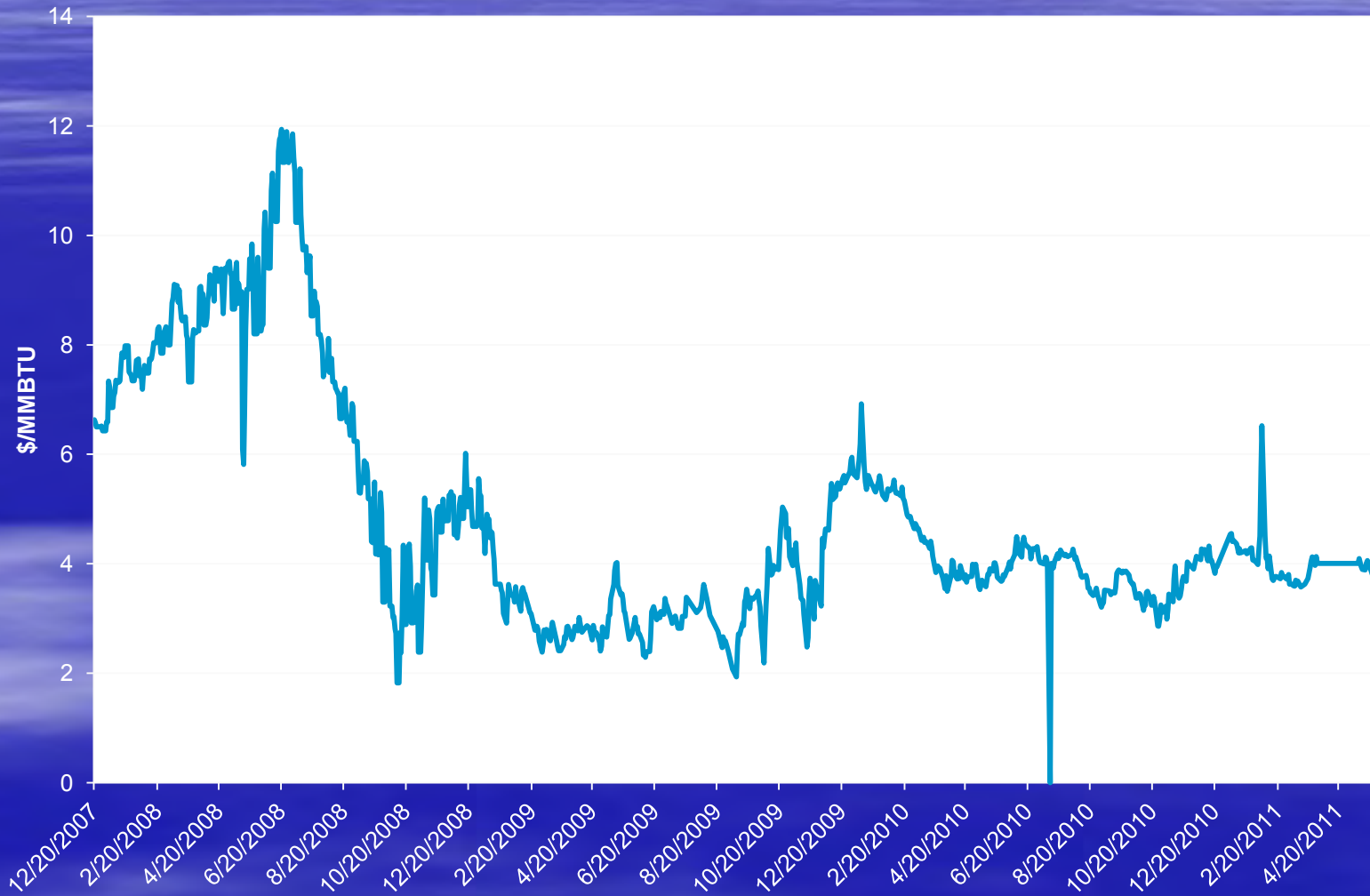
Historic NG Prices



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Historic SJ IFERC

San Juan IFERC



RECs

Renewable Energy Certificates

Utilities purchases RECs for their portfolio
(mandated by State)

Digester gas = Biomass REC



Future Projects

- Install 1 MW Solar Array in 2012
- Replace engines with 2 turbines
- Increase Digestion Capacity