

Resource Planning and Energy Efficiency: The Minnesota Experience

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Transition Strategies

- Maximize energy efficiency
- Modernize existing power plants
- Upgrade transmission infrastructure for site-dependent renewable energy resources
- Invest in new technologies, e.g. fuel cells
- Move toward hydrogen



Energy Efficiency

- DOE: Efficiency could cut energy use by 10% in 2010, 20% by 2020
- Minnesota experience
 - Utility expenditures have declined since mid-90's
 - Xcel Energy programs alone have saved 2,000 megawatts (or 2 Prairie Islands) over 15 years



Minnesota Context

- State law has required utility investments in energy efficiency since 1988; most electric utilities must spend 1.5% GOR, Xcel Energy must spend 2% GOR, gas utilities must spend .5% GOR; or about \$60 mil/yr
- State PUC has required resource plans since 1992 from all IOU electric utilities and G&T coops

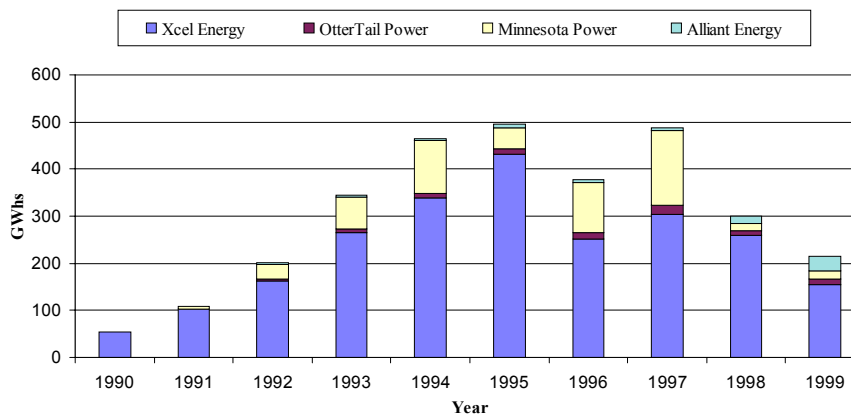


Conservation Improvement Program

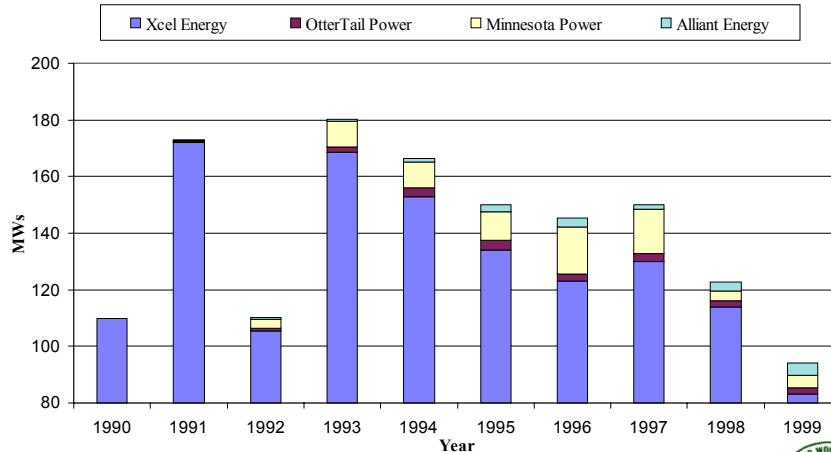
- Covered utilities present two-year plans on a rolling cycle to state Dept. of Commerce (also the state energy agency)
- Non-utility plans are also reviewed and occasionally included in plan orders
- Plans usually include combination of direct impact, load management, education and R&D (e.g., efficiency potential studies)



Historic CIP Energy Savings



Historic CIP Demand Savings



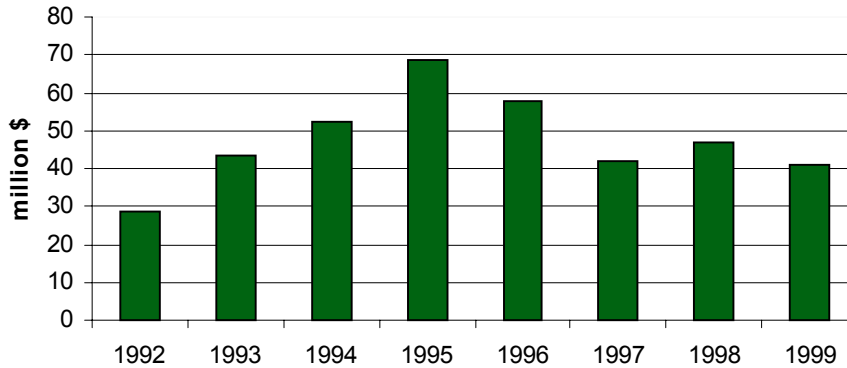
Financial Incentives

- Initially based on recovery of “lost margins” on energy saved
- Cumulative lost margins became quite large by mid-90’s and were disallowed by PUC in 1999
- New incentives based on share of net benefits implemented in 2000; incentive kicks in and increases as goal is surpassed



CIP Investment

(Investor-Owned Utilities in Minnesota)



Energy Efficiency in IRP

- Utility IRPs are filed every two years
- Plans include:
 - 15 year demand forecasts (energy and peak)
 - Expected resource needs (energy and capacity)
 - DSM resources modeled at 50% and 75% of new demand
 - Supply alternatives (i.e., fossil, nuclear, renewables, DG) and associated transmission



Energy Efficiency in IRP (cont.)

- Discussion of DSM often includes a market potential study, which must be updated at the PUC's direction
- Utility capacity expansion models perform integration of supply and DSM resources to achieve utility's preferred plan, but with mixed results



Energy Efficiency in IRP (cont.)

- PUC sets 15-year DSM goals for both energy and capacity as part of final IRP order for each utility
- Unfortunately, little coordination between 15-year IRP goals and 2-year CIP plans
- PUC and DOC turf battles and split functions don't help



Recent Legislative Impacts

- Energy Security and Reliability Act of 2001
 - Spending requirement for coops doubled
 - Spending by munis from 1% to 1.5%
 - Limits percentage of funds munis/coops can use for load management
 - Groundwork laid for developing statewide programs
 - Several studies ordered



Recent Legislative Impacts (cont.)

- Nuclear waste bill 2003
 - No change to spending levels
 - Utilities that meet certain renewable energy objectives may divert up to 5% of CIP funds to additional renewable projects
 - Reporting requirements for certain small utilities modified
 - Legislative auditor evaluation of CIP statute, rules and regulatory oversight



Current and Future Issues

- “Base-load” savings vs. load management
- Appropriateness of financial incentives
- T&D savings from efficiency – real or not, how to quantify?
- Security and reliability benefits – same ?’s
- Economic benefits – recent DOC report estimates \$7 return for every \$1 invested
- Market penetration/saturation issues

