

UVM Energy Policy Series

February 9, 2004

Presented by:

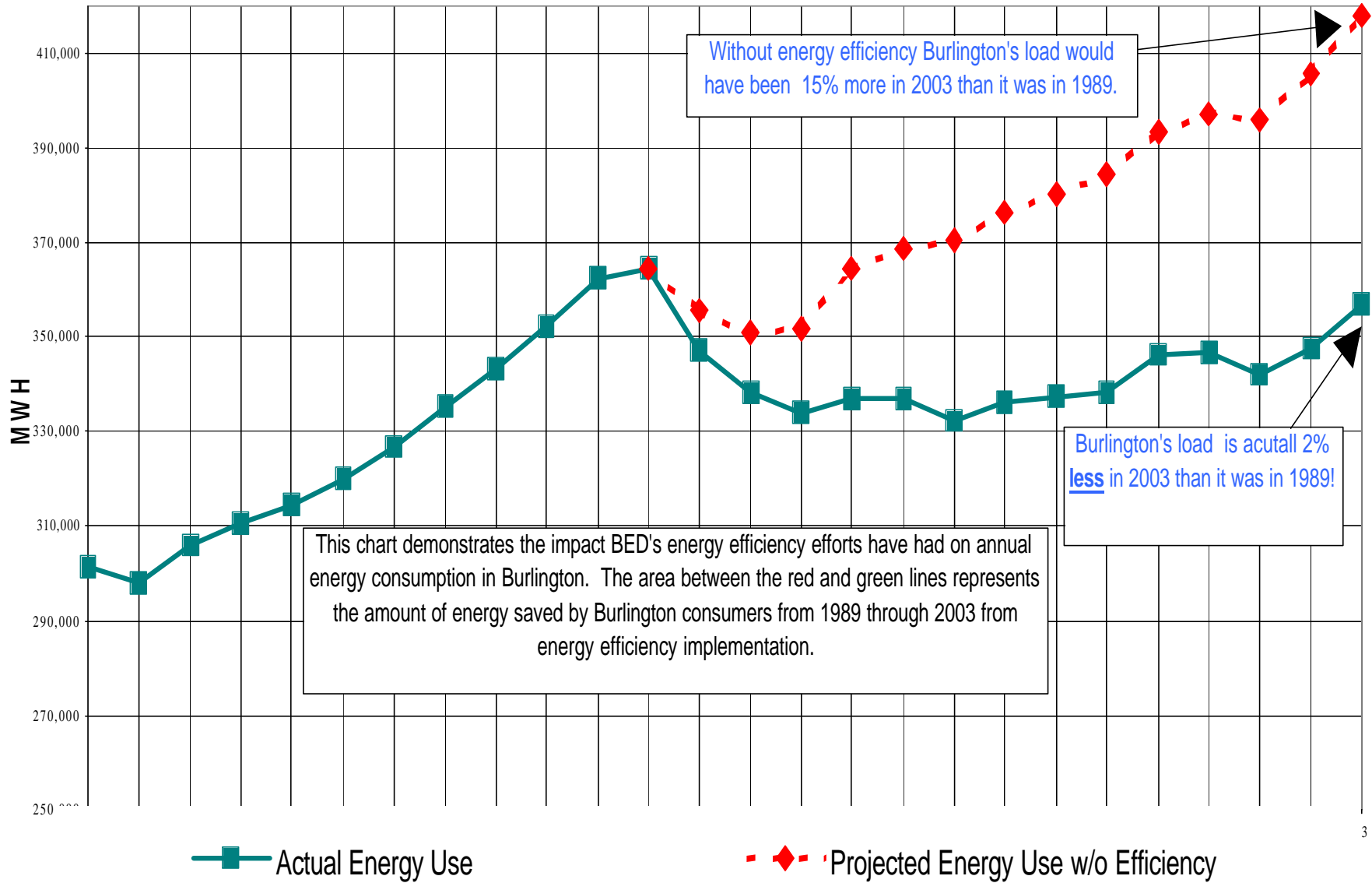
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About Burlington Electric Department (BED)

- Municipal (not for profit)
- Serve the City of Burlington (19,600 customers)
- Long standing commitment to renewable power and energy
- Power Supply
 - ✓ Long term focus
 - ✓ Focus on fiscal prudence and environment
 - ✓ Focus on sustainability and economic development
 - ✓ Focus on balanced approach of competing interests

Total Energy Use (MWH) for the City of Burlington

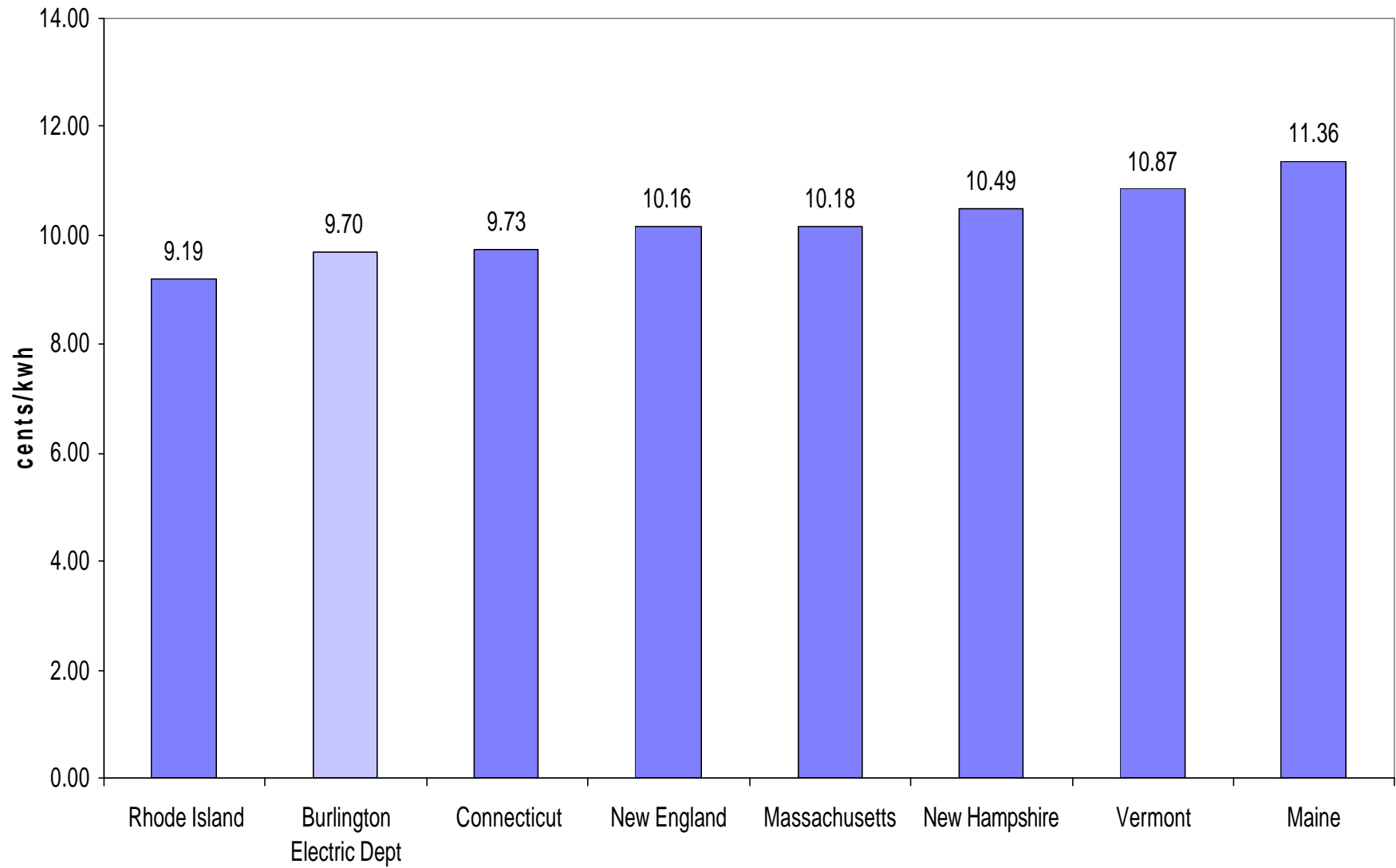


Burlington's overall rates are 11% lower than statewide average



- In 2002 BED's average rate was 9.7 cents/kwh
- Vermont statewide average in 2002 was 10.87 cents/kwh
- Burlington's residential rates are 26% lower than the statewide average
- Burlington's average business customer rate was 9.78 cents/kwh
- Since 1995 Burlington's business rates dropped 19%
- BED increased renewable power from 31% in FY2002 to 40% in FY2003

2002 Avg New England State Utility Rates



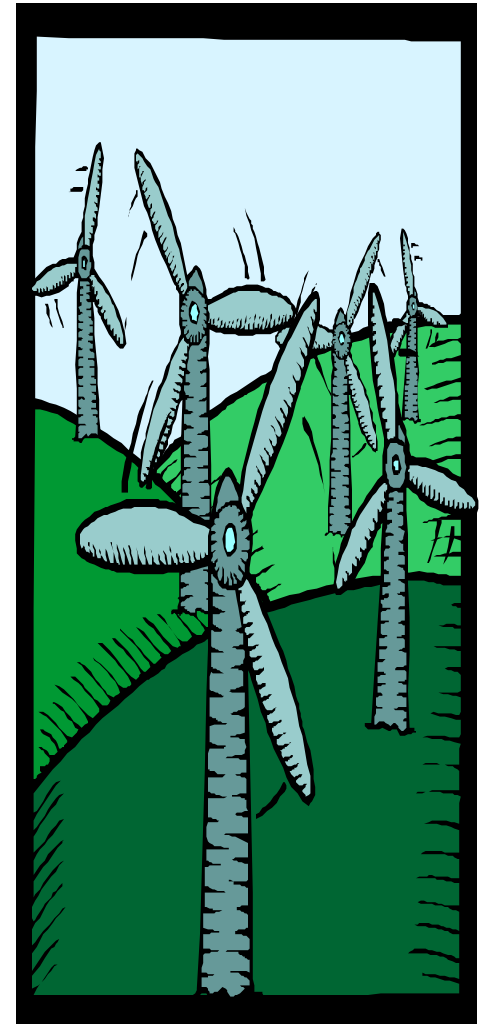
Economics of Wind

- Long term purchase power commitment necessary to build wind
 - Developers looking for 15 to 20 years
 - Allows cost to be spread over time and reduces cost of energy
- Price for wind power is falling
 - 1979: 40 cents/kwh
 - 2000: 4 to 6 cents/kwh
- Vertically integrated utilities appear to be best suited to buy significant wind resources
 - ✓ Purchases can be done on scale that make economics work
 - ✓ Long term (15 to 20 years)
 - ✓ Retail choice not spurring development of wind
 - ✓ Individual buying power too small
 - ✓ Retail consumers do not commit long term (15 – 20 years)



Economics of Wind

- PPA gives known long term fixed cost
- No fuel adjustment clauses in wind contracts
- Energy price escalates at a rate less than inflation
- Wind resource adds fuel diversity to power supply
- Wind farms are a composite of many small generators
 - ✓ minimizes entire plant loss risk
 - ✓ turbine maintenance cycled - not all units out at once



Economics of Wind

- COST counts
- Bigger is better (economies of scale)
- REC sales key - lowers cost of energy
- REC sales limit ability to claim power as wind/renewable
- REC's managed properly can lower energy costs from wind projects
- Don't have to sell all REC's from project – sell some/keep some

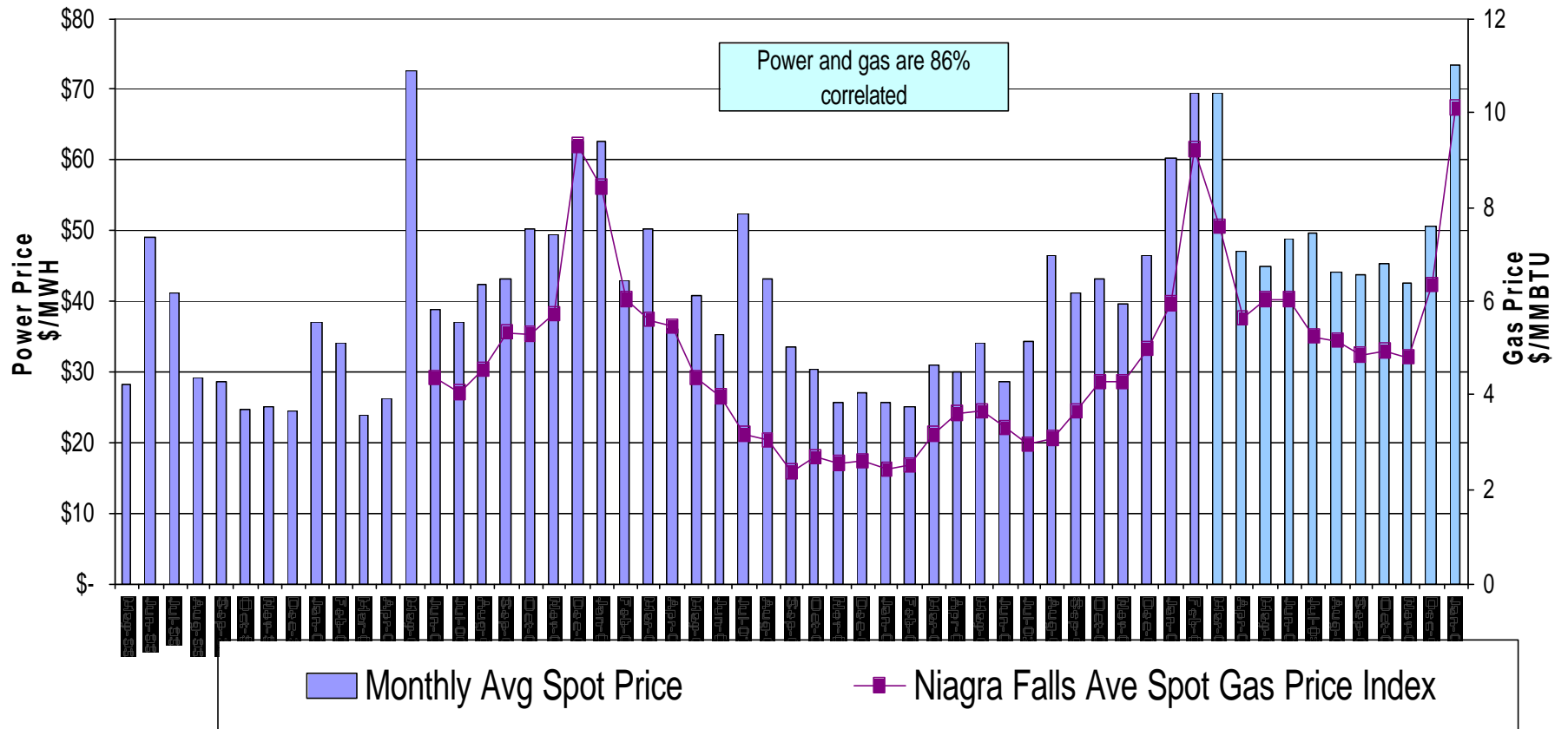


Wind vs Wholesale Markets

- Wholesale market costs:
 - variable
 - volatile
 - driven by natural gas trends (price and perceived availability)
 - uncertain
- Wholesale electricity markets moved to new paradigm that makes load pay congestion costs (known as locational marginal pricing)
- Farther away generation is from load greater risk of congestion costs
- Construction of major new natural gas power plants in ME, MA, CT, and RI. Known in Vermont. Need adequate TRANSMISSION to get it here.
- New England peaks at 25,000 MW
- Regional generation at 32,900 MW
- Almost experienced rolling black outs in January 2004 – only 22,000 MW peak load
- Locational Marginal Pricing (LMP) creates an incentive to obtain generation close to load
- Building wind in Vermont can act as risk hedge to LMP's
- Management of REC's can lower energy costs from wind resources



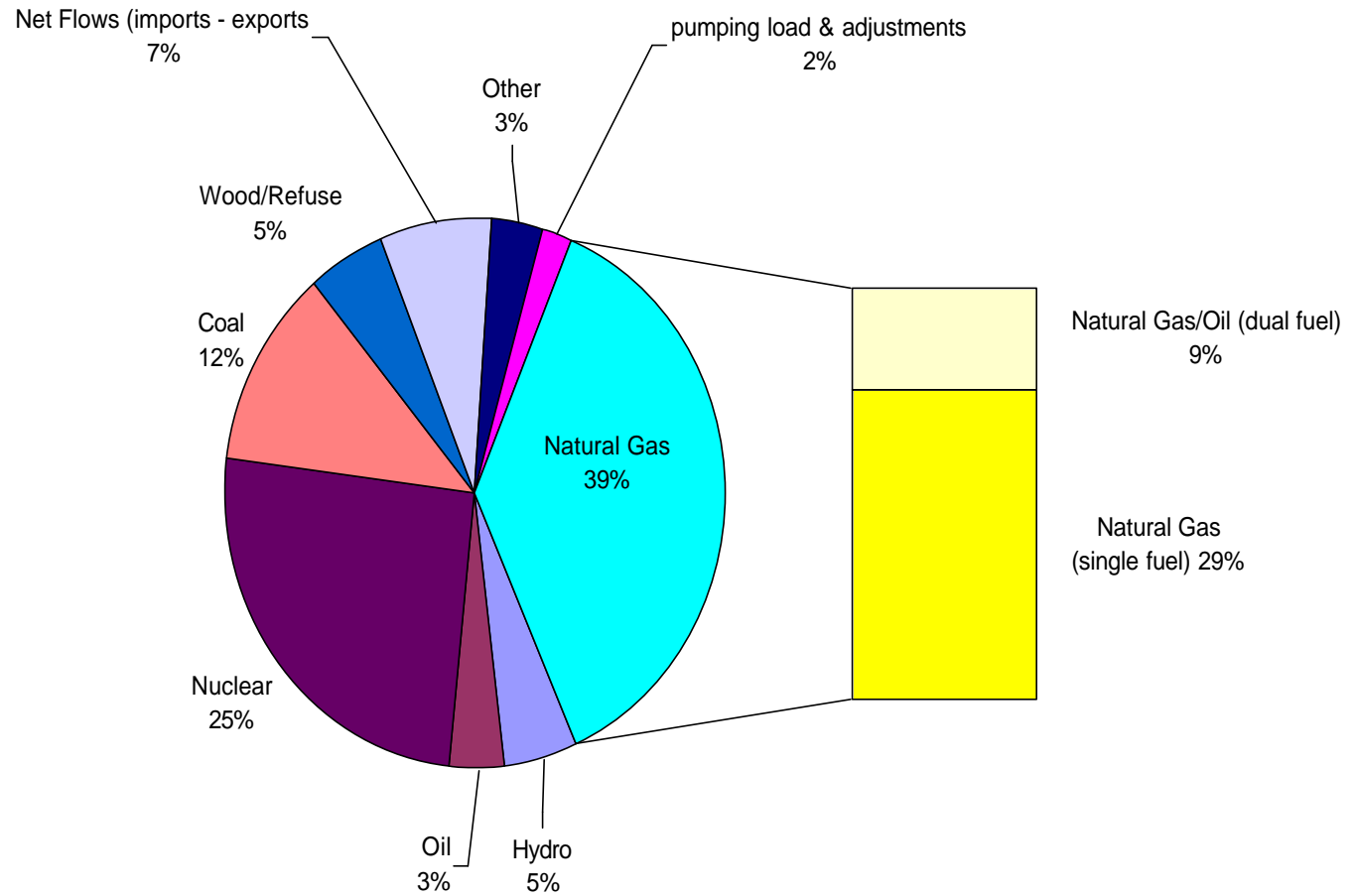
New England Spot Electricity Market vs Niagra Falls Ave Spot Gas Price Index



Data Source:
 Natural Gas: Natural Gas Exchange (www.NGX.com)
 New England Spot Electricity Market: www.iso-ne.com

New England converted to SMD 3/1/2003. Monthly energy prices from 3/1/2003 to date represents Vermont Zonal average in the Real Time energy market

2002 Sources of Energy in New England



Data Source: ISO-NE website
 Prepared by Burlington Electric Department 9/2003

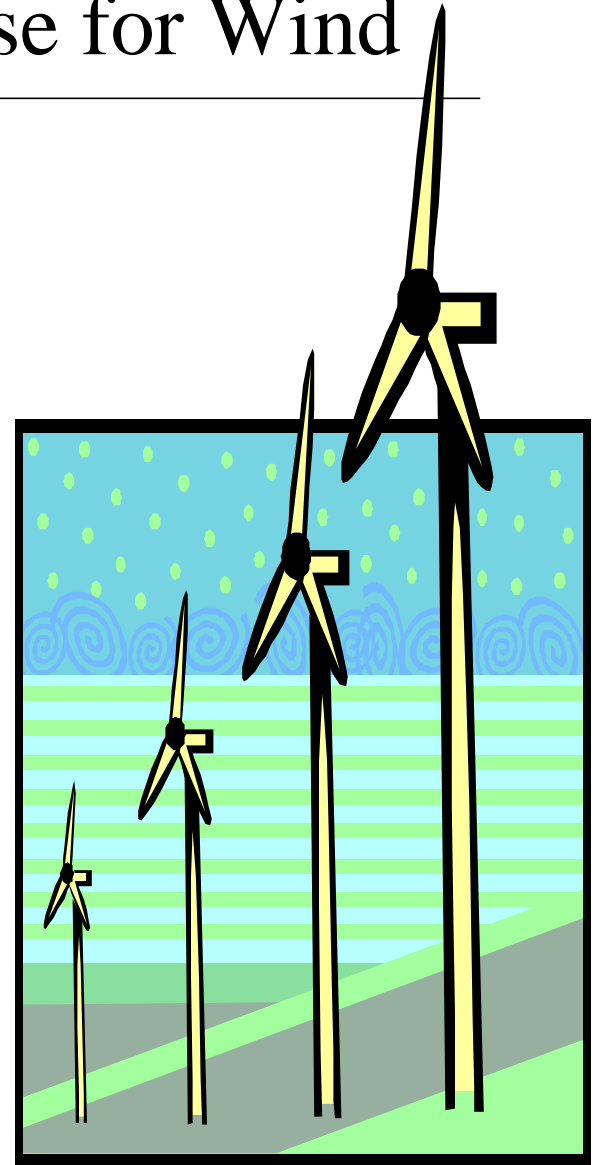
Burlington entered a long term purchase power agreement with Equinox Wind Partners



- Construction pending receipt of permits
- Commercial operation between 2003 and 2005
- Total 9 MW nameplate rating
- 23,500 MWH
- 7% of Burlington's energy
- Equivalent to 4,000 Burlington homes
- Adds diversity to power supply
- In-state energy
- Local jobs and tax benefits
- No air emissions
- Renewable
- Off-sets fossil fuel generation in New England
- Sale of environmental attributes through REC's (Renewable Energy Credit) lowers cost of energy coming from site

Summary – The Economic Case for Wind

- Risk Hedge
- Cost of Energy can be managed by sale of REC's
- Power supply diversity
- Closer to load is better
- Ancillary economic benefits to towns with wind turbines
- Wind is part of a balanced power portfolio
- Wind is part of a forward thinking vision
- Wind does contribute to rate stability



Thank You

Questions?