ISO new england

SPI
STRATEGIC PLANNING INITIATIVE

Strategic Planning Initiative Update

Vermont System Planning Committee

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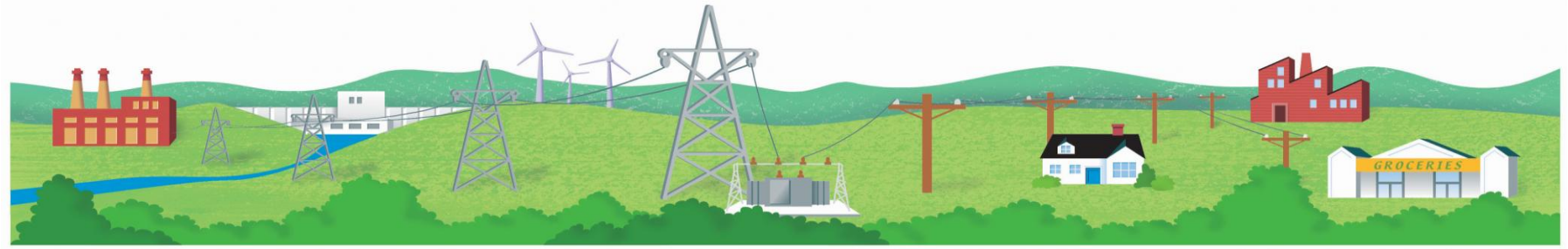
EXTERNAL AFFAIRS

REGIONAL POWER GRID OVERVIEW

A system in transition

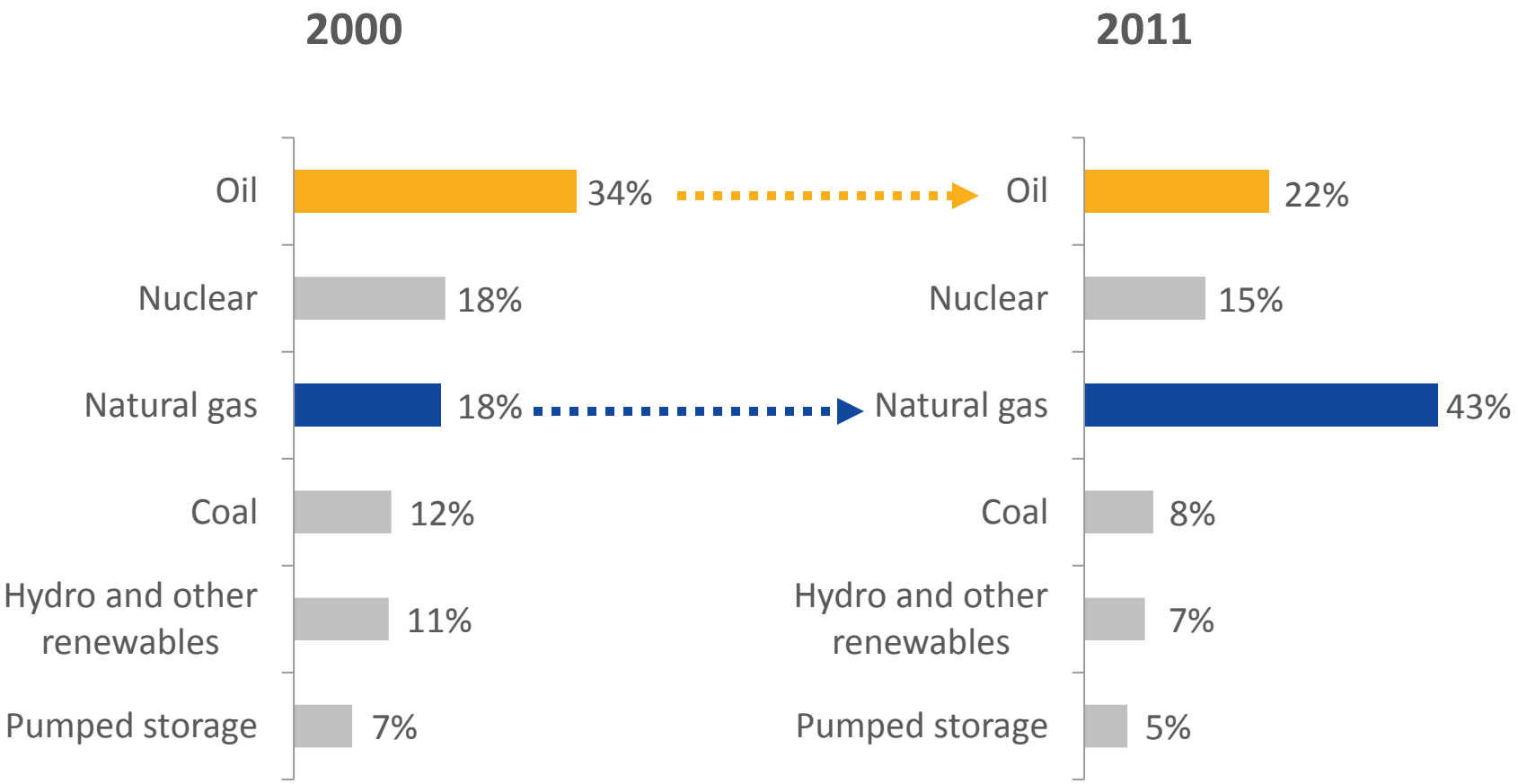
Many Factors Impact Regional Power System

- Public policies
  - Enhanced environmental compliance requirements
  - Incentives for renewable development including RPS
  - Energy-efficiency investments
  - Long-term contracting
- Markets
  - Integration of demand response into energy markets
  - Forward Capacity Market reforms
  - Market conditions: natural gas prices down, oil prices up



Region's *Capacity* Shift from Oil to Natural Gas

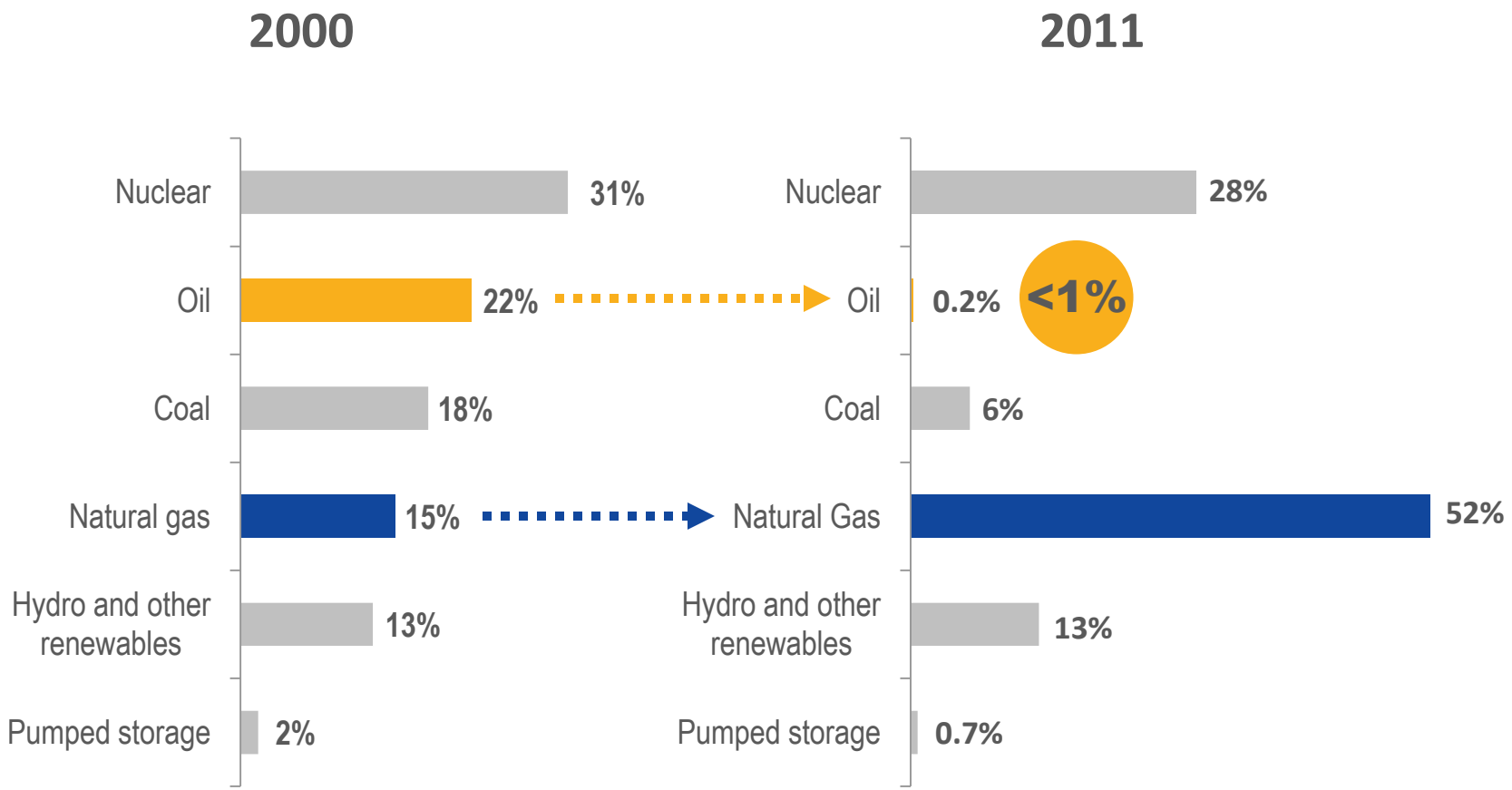
Percent of Total System Capacity



Other renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and misc. fuels.

Shift in Energy Production

Addition of new natural gas units makes natural gas the dominant fuel in region



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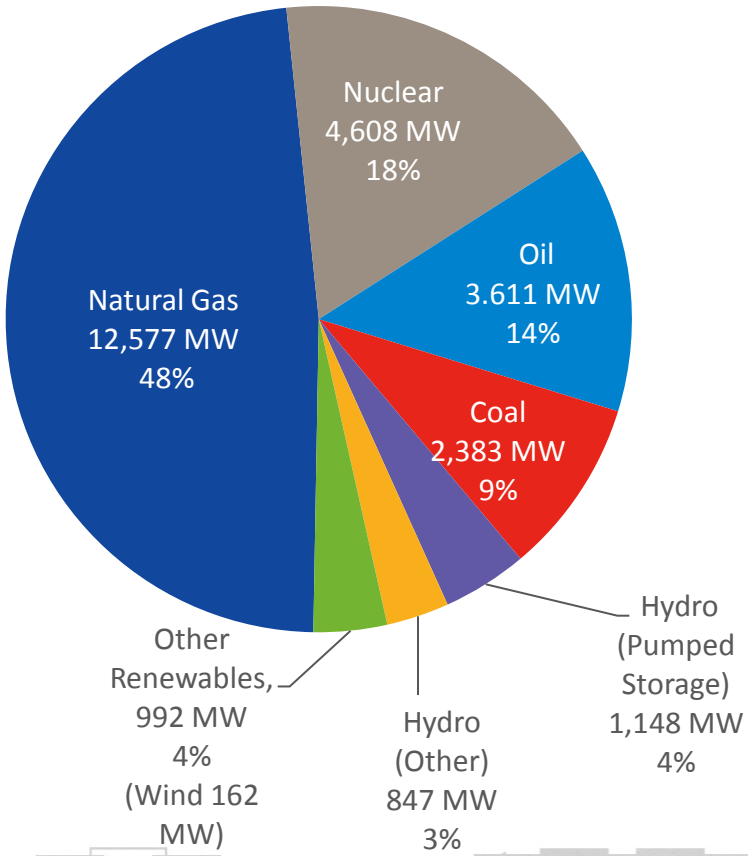
Generation During 2011 Systemwide Peak

Though rarely dispatched throughout year, oil provided much-needed energy

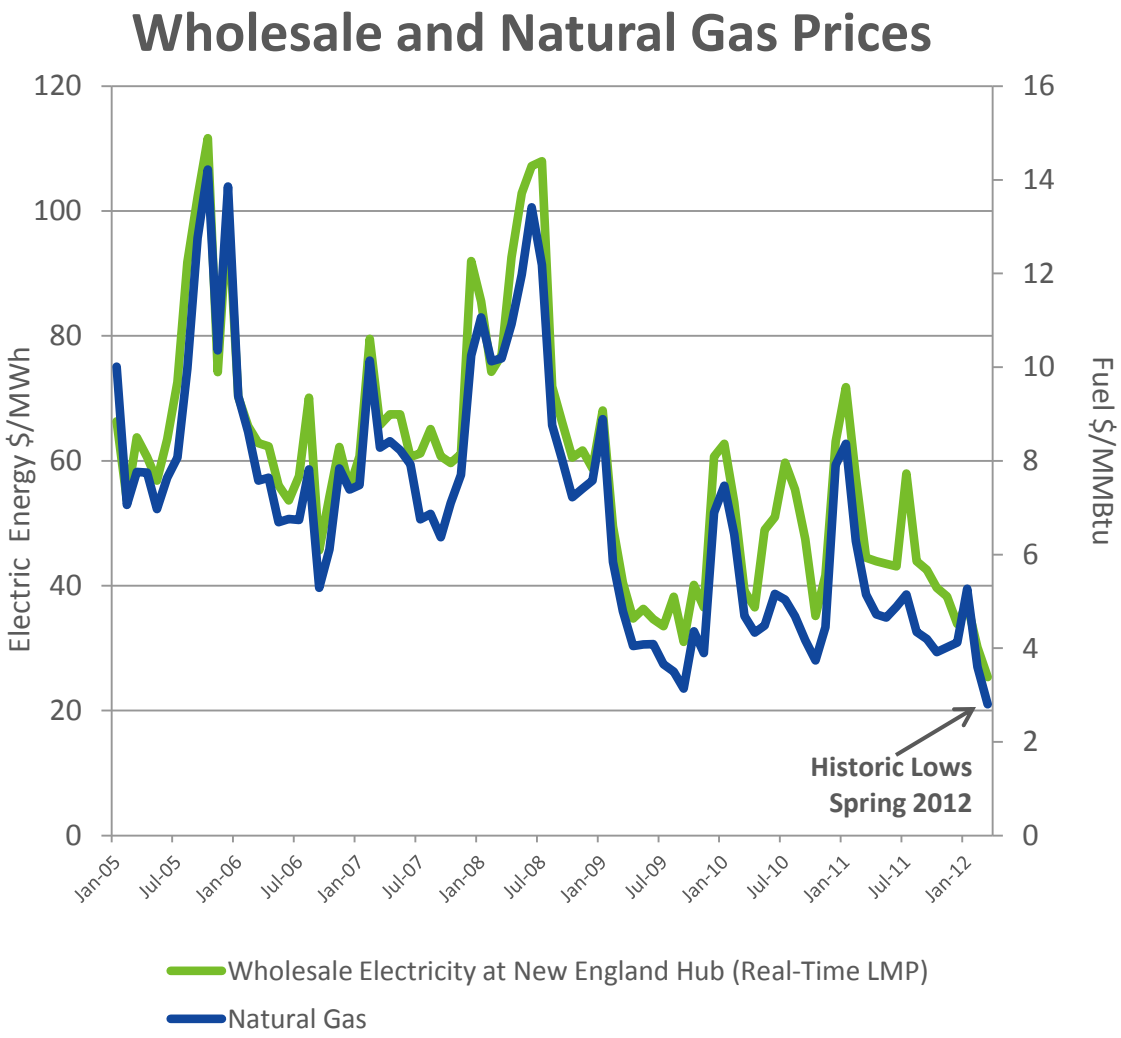
Generation: July 22, 2011 (26,166 MW)



- Coal and oil represented nearly 25% of energy at time of system peak.
  - These oil and coal units provide great value to the region during peak demand.
  - With less energy revenue, oil resources depend on capacity revenues to be available.

Historic Low Wholesale Prices

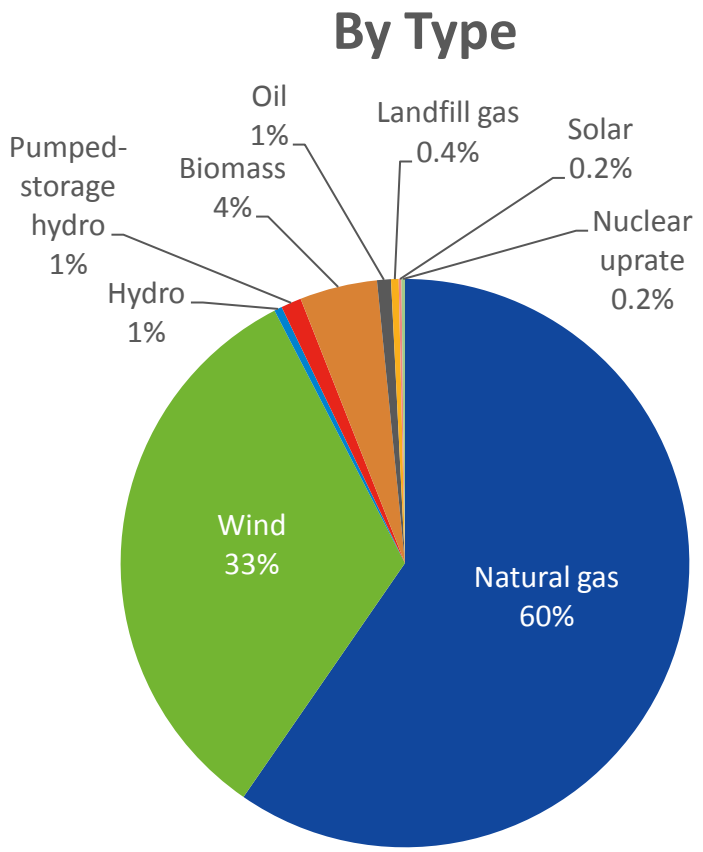
- Natural gas often sets wholesale electricity market prices
- Region in midst of record-low gas and electricity costs
- Any disruption in gas supply to power plants can impact electricity prices



Generator Proposals in the ISO Queue

Approximately 6,500 MW – majority natural gas and wind

- Natural-gas-fired generation
  - 60% of proposed projects
- Wind projects
  - A third of proposed projects
- Addition of more natural gas to balance intermittent renewables could exacerbate region's heavy reliance on natural gas



As of April 2012

STRATEGIC PLANNING INITIATIVE

Overview

Strategic Planning Initiative

SPI
STRATEGIC PLANNING INITIATIVE

- Region-wide stakeholder participation
- Five challenges identified
  1. Resource performance and flexibility
  2. Increased reliance on natural-gas-fired capacity
  3. Retirement of generators
  4. Integration of variable resources
  5. Alignment of planning and markets
- Region considering/developing solutions
- Getting ahead of the curve
  - Market design and power system infrastructure take time to develop

Categories of Capacity Market Enhancements

ISO recommendations should help region meet the five Strategic Planning Initiative challenges

1. Core capacity product definition and performance incentives
   - Improve definition of the core capacity product
   - Create appropriate performance requirements
   - Add incentives for performance
   - Add consequences for failing to perform

2. System operational needs
   - Identify system operational needs
   - Translate into additional product specifications with appropriate delivery incentives and consequences

3. Locational resource requirements
   - Add specificity to locational requirements
   - Configure market to induce locational responses

Enhancement 1: FCA 9
Seeks to resolve challenges:
•Performance & flexibility
•Natural gas
•Plant retirements

Enhancement 2: FCA 9/10
Seeks to resolve challenges:
•Performance & flexibility
•Natural gas
•Integrating variable resources

Enhancement 3: FCA 9/10
Seeks to resolve challenges:
•Plant retirements
•Alignment markets/planning

Capacity Market Enhancements Only Part of Solution

- Additional solutions needed because enhancements to FCM will take time.

- ISO actively working on developing proper market mechanisms to promote certain types of investment.
  - Dual-fuel capability
  - Firm gas arrangements

- Other solutions being considered to meet regional challenges:
  - Potential energy market and operational design changes
    - Hourly day-ahead and intraday reoffers
    - Aligning natural gas and electricity markets

Recent Strategic Planning Studies & Reports

- Natural Gas
  - Study of the amount of natural-gas-fired generation that can be served by the natural gas system after all firm/priority natural gas customers are served
    - Look at a future case when oil/coal resources may be retired and repowered with new, natural gas resources
- "Roadmap for New England"
  - White paper that puts forth near-term and longer-term solutions for the region
- Forward Capacity Market redesign paper
  - Conceptual document that begins to outline changes to the FCM

Strategic Planning Reports Underway

- Natural gas
  - White paper to propose market solutions to natural gas dependency
- Generation retirements
  - Study of units expected to face significant capital investment due to regulatory requirements
- Strategic transmission analysis
  - Study of long-term transmission system needs for two future resource scenarios:
    - Generator retirements
    - Wind expansion

Strategic Planning Reports Underway, *cont.*

- Of special note for the Vermont System Planning Committee, will be ISO's efforts on non-transmission alternatives (NTAs). These are also know as market resource alternatives (MRAs).

- Soon, ISO will release a white paper proposing new approaches to MRAs.

- These are framed in terms of better aligning regional planning processes and markets.

Strategic Planning Reports Underway, *cont.*

- Enhance alignment between planning and markets
  - Stakeholders and ISO have noted that existing wholesale markets do not fully reflect system reliability requirements that are identified through the region's system planning process.
  - Investments in new generation or demand-side resources obtained through competitive markets may be better solutions than traditional transmission project.
  - Potential generator retirements are a key driver:
    - Unless located optimally, retirements could result in the need for both capacity and transmission solutions.
  - The forthcoming MRA white paper will propose a method to incorporate identified local and system reliability requirements into resource adequacy markets.
  - ISO will be back to discuss this in greater detail in the near future.

Questions