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Integrated Resource Planning in the U.S. Overview

Presented to the South Carolina Office of Regulatory Staff
March 1, 2021

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Agenda

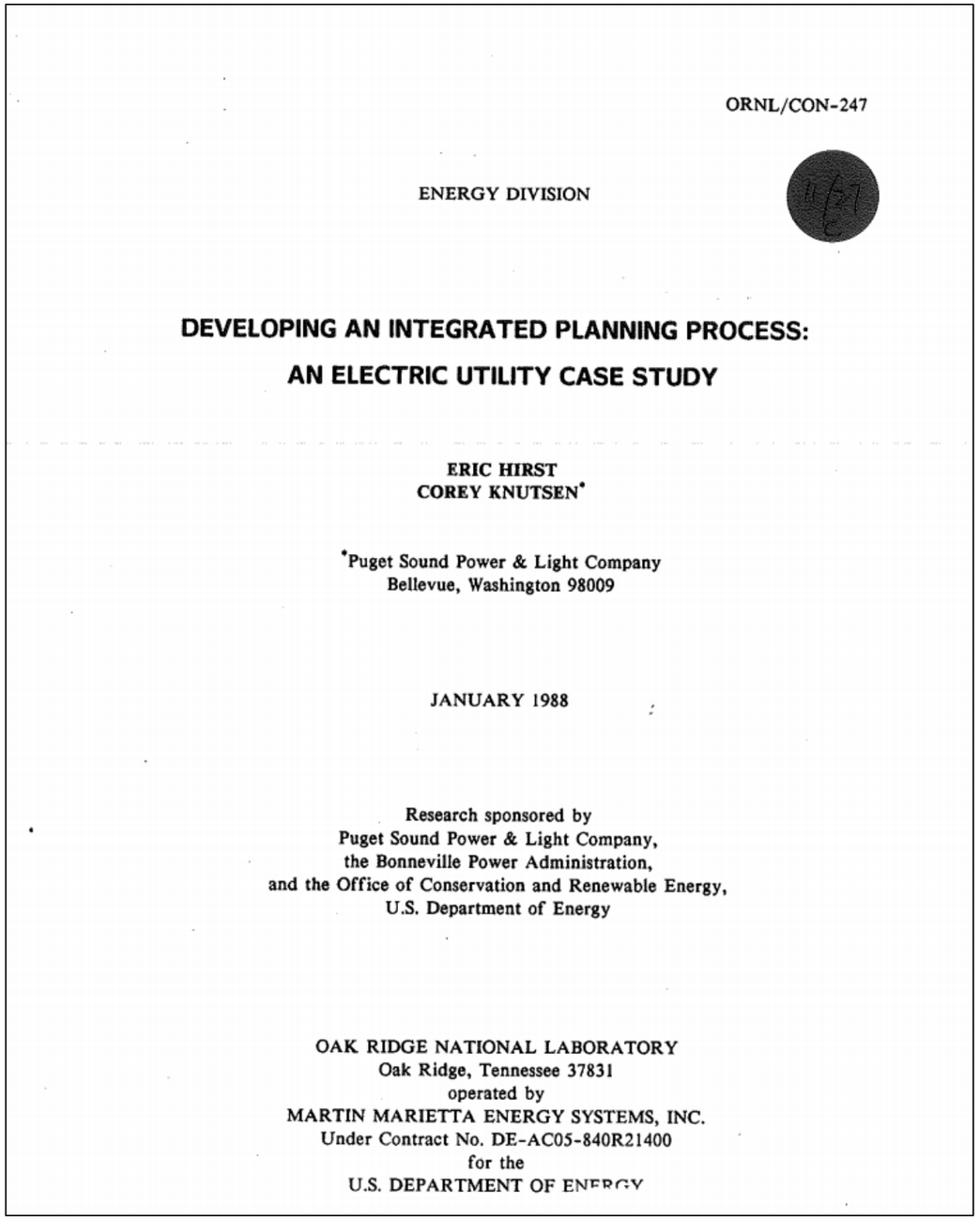
- Origin of IRP in U.S.
- Geography and frequency
- Basic governance structure
- Requirements

Origin of IRP in U.S.

- The 1970s in the U.S. electric utility industry was an era of large, central generating stations
- Cost over-runs and construction delays along with concurrent events or trends put the U.S. on a path to IRPs. As the 1970s gave way to the 1980s we saw:
  - Growth and growing political power of the environmental movement
  - Growing recognition of the cost-effective potential of energy efficiency and demand-side management (DSM)
  - Slowing in the forecasted growth rate in the demand for electricity / price response
  - Passage of Public Utilities Regulatory Policies Act of 1978 – creating QFs / IPPs
  - Bankruptcies and public outrage over nuclear power when the bills came due
- Integrated resource planning was one of the ultimate results

Origins – the 1980s

- In 1980s we saw “least-cost plans” that identified least-cost resources, but not necessarily including energy efficiency or DSM
- Integrated Resource Planning appeared in 1980s



ORNL/CON-247

ENERGY DIVISION

DEVELOPING AN INTEGRATED PLANNING PROCESS:

AN ELECTRIC UTILITY CASE STUDY

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JANUARY 1988

Research sponsored by
Puget Sound Power & Light Company,
the Bonneville Power Administration,
and the Office of Conservation and Renewable Energy,
U.S. Department of Energy

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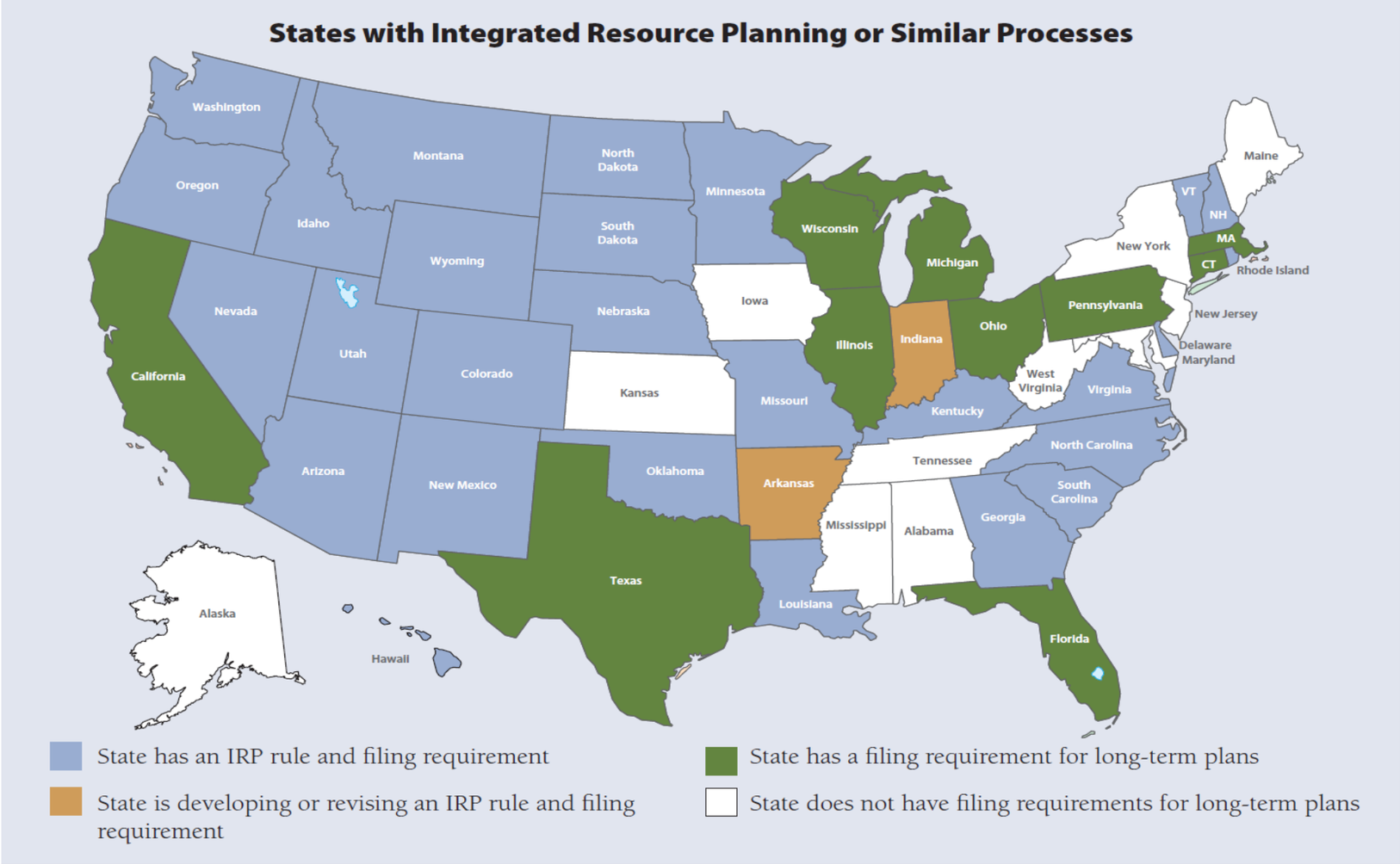
Map of IRP Geography in the U.S., 2020

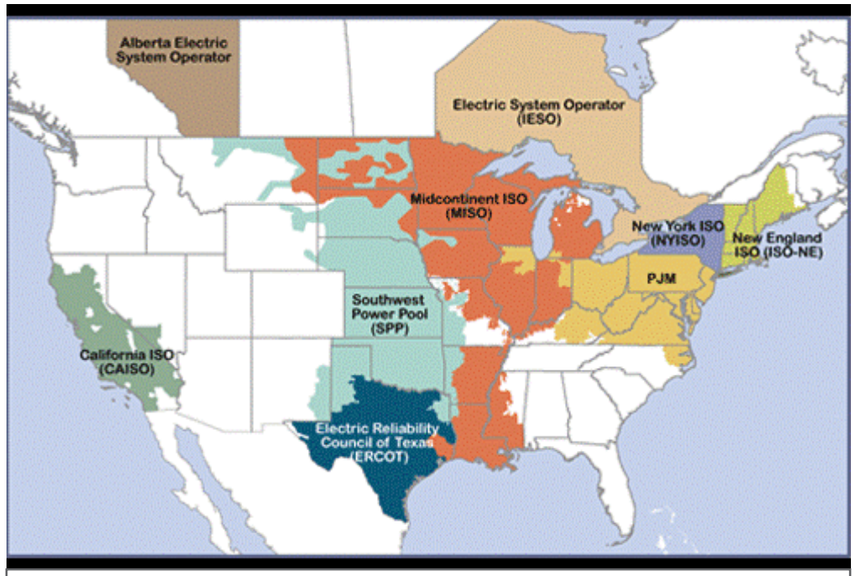


Wilson, R. and B. Biewald, 2013, *Best Practices in Electric Utility Integrated Resource Planning, Synapse Economics, prepared for Regulatory Assistance Project.*

Discussion of IRP Geography in the U.S.

- Over 35 U.S. states require utilities to file IRPs or equivalent planning documents
- Requirements imposed either through regulation or legislation
- Utilities required to prepare IRPs or equivalent and file with state regulators
- Requirements vary; the requirement can be placed on
  - All investor-owned utilities (IOUs)
  - All utilities above a certain size (# of customers or # of MW)
  - Only the default power supplier (retail choice states)
  - State agencies, in lieu of utilities in states with retail choice
- IRPs of non-investor-owned utilities tend to not be subjected to the level of regulator review that IOUs' IRPs receive; IOU IRPs tend to be subject of dockets that can sometimes be contentious and lengthy

Geography and Frequency



Source: U.S. Federal Energy Regulatory Commission

- States without centralized markets tend to require IRPs; more sporadic in states covered by centralized markets
- Frequency of IRP updates
  - 2 years (14 states)
  - 3 years (13 states)
  - 4 years / 5 years (1 state apiece)
  - Unspecified (1 state)
- Planning horizons for IRP rules
  - 10 years (5 states)
  - 15 years (6 states)
  - 20 years (14 states)
  - Source: Wilson, R. and B. Biewald, 2013

IRP Governance Structure

- State regulatory commissions usually have oversight where IRPs are required
- US regulators review IRPs and “approve” or “accept,” “modify,” or “reject” or “deny”
  - Approval of an IRP does not mean approval of a future construction project
  - When asked to approve a utility construction proposals (for rate recovery), regulators do check to see if the project was included in prior IRPs
- Regulatory commissions’ administrative rules and/or state law include list of attributes each IRP must exhibit
  - IRPs often include a checklist indicating requirements are met
  - IRPs should include near-term action plan to describe steps to be taken between publication of current IRP and the next IRP
  - IRPs often include a section/appendix describing progress made on prior action plans

Basic structure and minimum content, example from State of Washington

SC Code § 58-37-40 (2019) includes a similar list

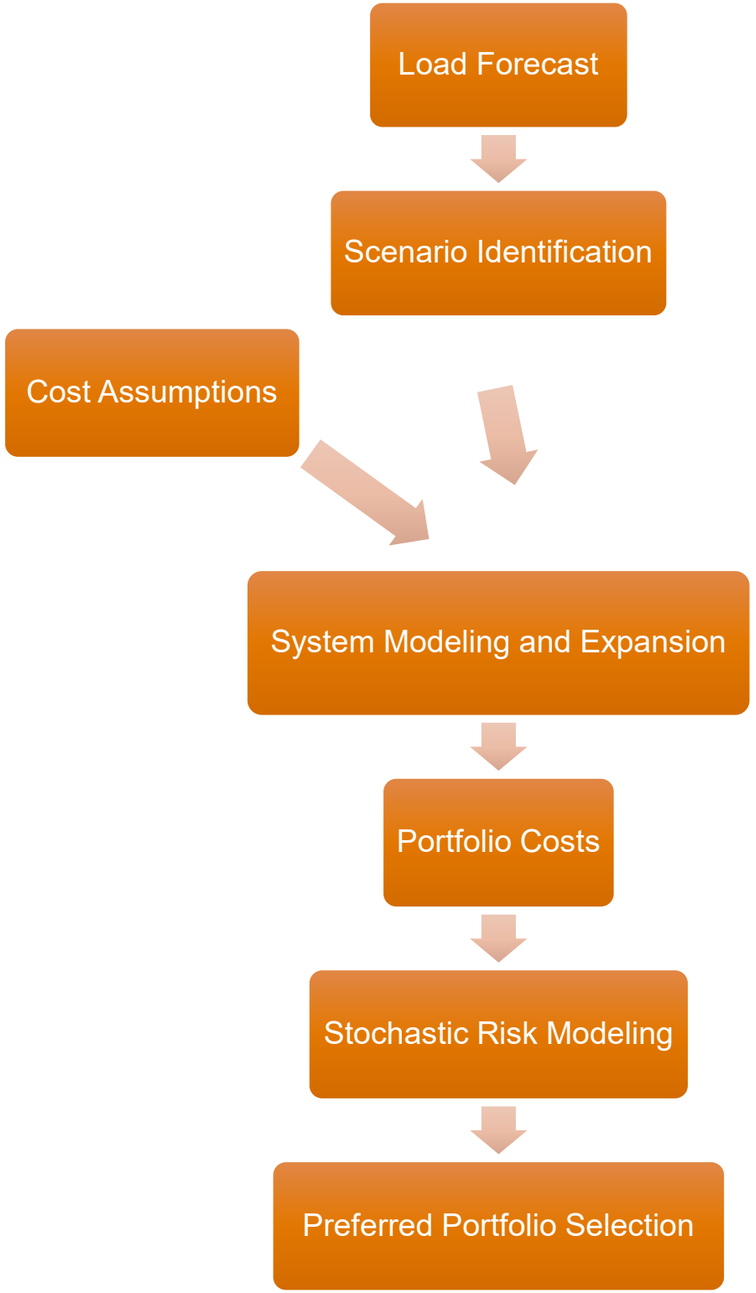
- Range of load forecasts
- Assessment of commercially available conservation
- Assessment of commercially available generation resources
- Assessment of transmission system capability
- Comparative evaluation of supply resources (including transmission and distribution) and improvements in conservation – Least reasonable cost
- Integration of demand forecasts and resource evaluations
- Short-term plan for 2 years following plan submission
- Report on the utility's progress toward implementing recommendations of prior plan

Requirements, Cont., and Processing IRPs

- IRPs docketed for review by Commission and by stakeholders
- Information requests or discovery processes allowed in many states
- Commission staff play significant role in reviewing IRPs
- Commission acceptance of IRPs tends to include recommendations for improvements, and reviews prior IRPs to ensure past recommendations were incorporated
- IRPs generally include stakeholder involvement (of varying levels)
- Some states require stakeholder involvement

IRP Process Overview

- IRP puts pieces together in portfolios modeled to account for fuel and other costs, regulations, and other issues/constraints



Emerging Issues to Consider

- Distributed technologies like distributed wind, solar photovoltaics and grid-scale solar and wind have been challenging because of the intermittent nature
  - Addressing intermittent resources is an important aspect of reaching zero carbon emissions as proposed by many 2020 IRPs
- IRPs have also struggled with battery energy storage
  - Hourly-level analysis has been state of the art in IRP models
  - To analyze intermittent generation and storage IRPs need to develop new tools (this will be discussed more in a later section)
- New(er) technologies – off-shore wind, tidal energy, wave energy, small modular nuclear, and others
  - How much analysis is sufficient?

Questions?

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Thank you