



ELCON

Electricity Consumers Resource Council



IRP in Era of Transformation

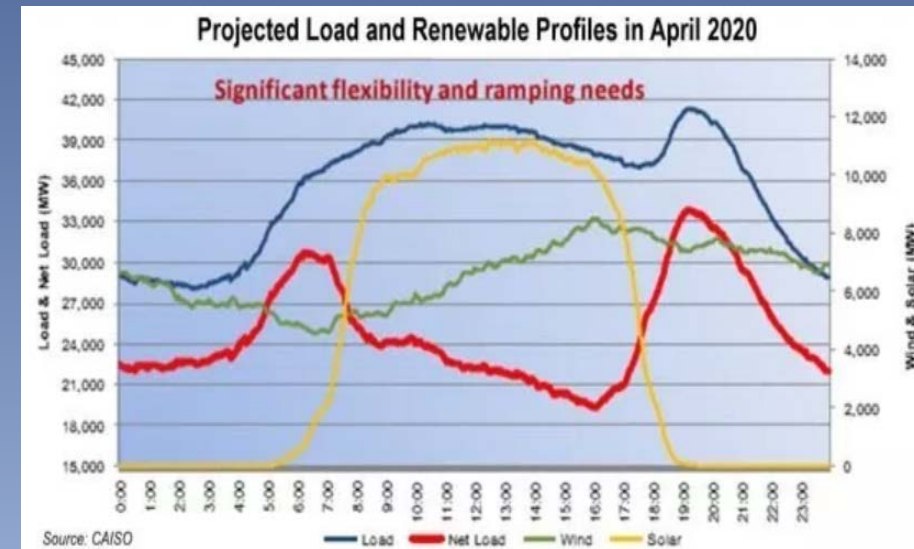
NMSU Current Issues 2019 April 8, 2019 Devin Hartman

IEN Resource Planning Challenges

Category	Key IEN Planning Challenge
Modeling the Changing Power System	<ol style="list-style-type: none">1. Incorporating operational detail2. Increasing modeling granularity3. Integrating generation, transmission & distribution planning4. Expanding analysis boundaries and interfaces5. Addressing uncertainty and managing risk
Integrating Forecasts	<ol style="list-style-type: none">6. Improving forecasting7. Improving modeling of customer behavior and interaction
Expanding Planning Boundaries	<ol style="list-style-type: none">8. Incorporating new planning objectives and constraints9. Integrating wholesale power markets10. Supporting expanded stakeholder engagement

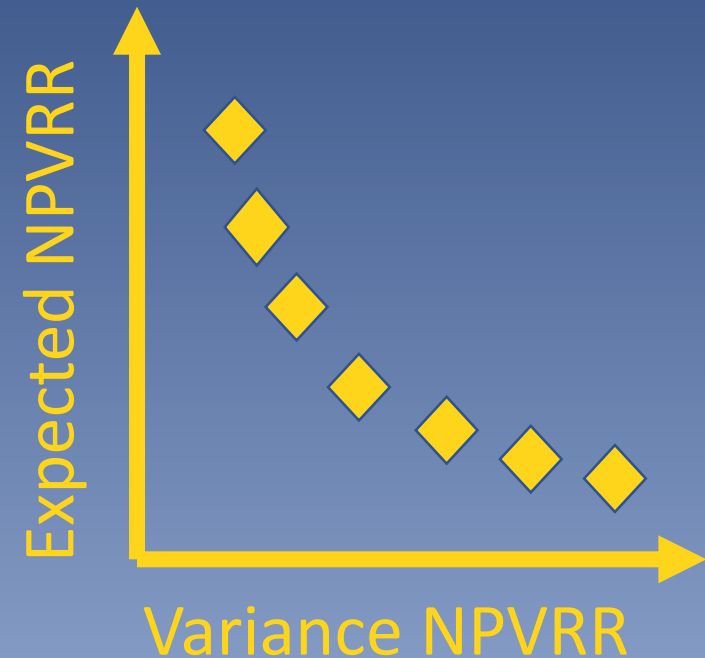
Incorporating Operational Detail

- Traditional planning outdated
 - “Representative” modeling \neq emerging resource heterogeneity
 - Static requirements \neq dynamic operating conditions
 - E.g., capacity long and ramp short
 - Economic and reliability ramifications
- Align IRP with regional operating conditions
 - Reconcile fragmented planning & central operations
 - Planning info deficit of Essential Reliability Services
 - Expand resource options to capture heterogeneity
 - E.g., DR and solar+storage
 - ISOs/BAs inform IRP process \rightarrow PUC prudence gauge
 - E.g., fuel assurance, flexibility requirements, capacity accreditation



Managing Uncertainty and Risk

- Deterministic deficits
 - Stochastic & probabilistic approaches
- Expert validation of risk methods & parameters
 - Metrics (e.g., value at risk)
 - Scenario assumptions and construction
 - Portfolio selection criteria
- Fuel diversity not an explicit objective
 - Proper process drives optimal diversification
- Emphasize option value
 - Stranded asset risk → investment deferral & sunk cost avoidance
- Incorporate consumer risk preferences



Customer Behavior and Interaction

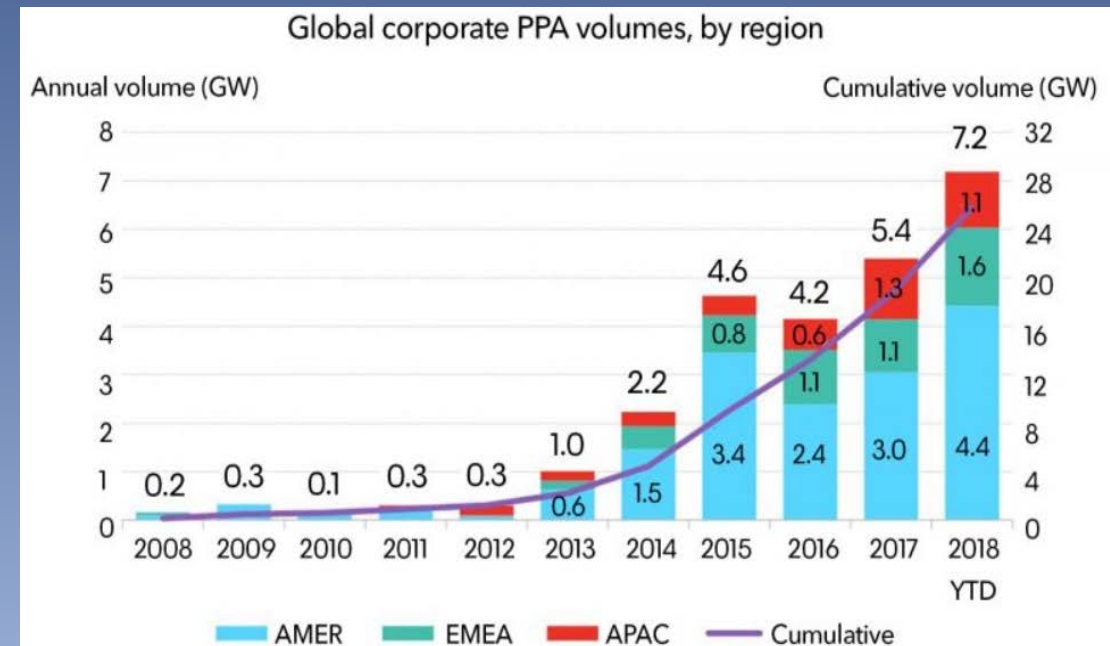
- Goals:
 - Incorporate customer preferences
 - Incorporate customer behavior
 - Improve IRP optimality and consumer satisfaction
- Tools:
 - Modeling of utility-specific consumer economics
 - Self-supply
 - Program opt-in/out rates
 - New age data e.g., surveys, revealed preferences
 - Behavior e.g., subclass consumption profile
 - Preferences e.g., DR compensation & CHP terms
 - Independent projections & consumer validation



Source: <http://tjogel.org>

New Planning Objectives & Constraints

- Unconventional planning parameters
 - Emissions reductions
 - Economic development
- Resilience
 - Determine econ parameters outside IRP
- Avoid IRP creep: keep policy exogenous
 - Utilities are policy-takers not makers
- Consumer corporate sustainability
 - Green pricing programs
 - Self-supply & direct access



Source: Bloomberg NEF. Note: Data is through July 2018. Onsite PPAs not included. APAC number is an estimate. Pre-market reform Mexico PPAs are not included. These figures are subject to change and may be updated as more information is made available.

Kyle Harrison, Bloomberg NEF, <https://www.bloomberg.com/professional/blog/corporations-already-purchased-record-clean-energy-volumes-2018-not-anomaly/>

Integrating Wholesale Power Markets

- Align IRP procurement with market design/obligations
- Third-party wholesale price forecasts
 - Levels and patterns e.g., brief spikes & chronic congestion
 - Inform resource characteristic valuation and locational value
 - Inform power purchase options → “market test” self-build
 - Enhance competitive procurement
- Treat active consumer participation as resource
 - Identify avoided costs of self-supply and DR → inform proactive tariffs
 - Segment consumers by value of lost load → differentiated reliability services
 - Requires consumer engagement...

Expanded Stakeholder Engagement

- Increasing complexity exacerbates:
 - Regulatory information asymmetry
 - Deficit of stakeholder understanding
 - Discord & intervention quality
 - Gap between best and actual IRP practices
- Remedies
 - Stakeholder-engaged IRP process
 - Meaningful IRP → CPCN connection
 - Incorporate independent expertise & consumer preferences
- Results: inc. optimality, stakeholder buy-in, better planning decisions

