

Check Your Grid Before You Wreck Your Grid

Evolving the demand side from load reduction to grid optimization with the Demand Stack.



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Managing demand is more important than ever

The U.S. Needs

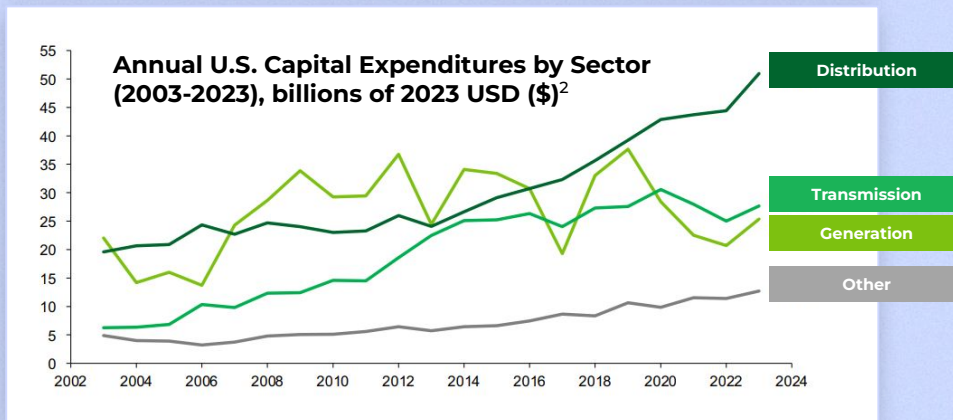
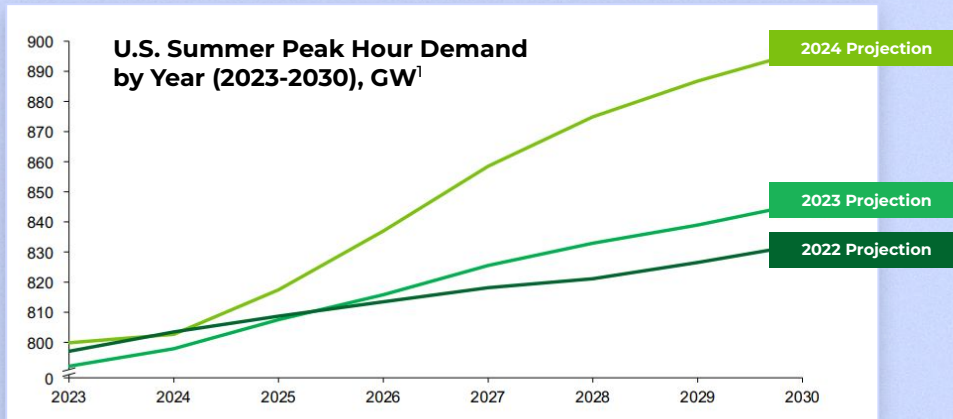
200 GW
of additional
peak demand by 2030

We can't build it fast enough 

Deploying

80-160 GW
of flexible load through
virtual power plants (VPPs)

Could Save **\$10 Billion**
in Annual Grid Costs



Why Is DSM Fragmented?

The Problem Isn't Technology, It's Structure

FEDERAL POWER ACT¹

(The Act of June 10, 1920, Chapter 285 of the 66th Congress)
(As Amended Through P.L. 115-325, Enacted December 18, 2018)
[Current: This publication is a compilation of the text of chapter 285 of the 66th Congress. It was last amended by the public law listed in the box Amended. Through note above and below at the bottom of each page of the pdf version and reflects current law through the date of the enactment of the public law listed at <https://www.govinfo.gov/app/collection/temp/>.]

[Note: While this publication does not represent an official version of any Federal Statute, substantial efforts have been made to ensure the accuracy of its contents. The official version of Federal law is found in the United States Statutes at Large and in the United States Code. The legal effect to be given to the Statutes at Large and the United States Code is established by statute (1 U.S.C. 115, 204.)
Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

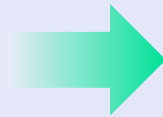
PART I

That a commission is hereby created and established, to be known as the Federal Power Commission (hereinafter referred to as the "commission") which shall be composed of five commissioners who shall be appointed by the President, by and with the advice and consent of the Senate, one of whom shall be designated by the President as chairman and shall be the principal executive officer of the commission: *Provided*, That after the expiration of the original term of the commissioner so designated as chairman by the President, chairmen shall be elected by the commission itself, each chairman when so elected to act as such until the expiration of his term of office.

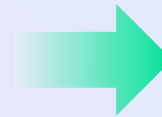
The commissioners first appointed under this section, as amended, shall continue in office for terms of one, two, three, four, and five years, respectively, from the date this section, as amended, takes effect, the term of each to be designated by the President at the time of nomination. Their successors shall be appointed each for a term of five years from the date of the expiration of the term for which his predecessor was appointed and until his successor is appointed and has qualified, except that he shall not so continue to serve beyond the expiration of the next session of Congress subsequent to the expiration of said fixed term of office, and except that any person appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed only for the unexpired term. Notwithstanding the foregoing, the President may, in his discretion, remove any commissioner and may, in his discretion, reappoint any commissioner who has been removed. Commissioners shall be appointed from among the employ of or individuals who have been employed by the



Legislation



Regulatory Proceeding



Utility Programs & Program Teams

Current New Jersey Proceedings Pertaining to the Demand Side

Triennium 2 & 3:
EE and DR

Energy Efficiency and Peak Demand Reduction
Triennium Proceeding

Grid Modernization

Developing Integrated Distribution Energy
Resource Plans

Energy Storage:
Transmission & Distribution Level

Garden State Energy Storage Proceeding

Rate Case

Advanced Metering Infrastructure
(AMI), Time-of-Use (TOU), and Electric Vehicle
Initiatives - all part of rate cases

FERC 2222

NJ DER Participation in Regional Wholesale
Electricity Markets Proceeding

What This Results In:

For Utilities	For Customers	For Outcomes
<ul style="list-style-type: none">• Separate Teams• Separate Budgets• Separate Performance Metrics• Separate Definitions for Success	<ul style="list-style-type: none">• Multiple Forms of Outreach• Outreach After Measure/Program Adoption• Confusion On Bill Changes and Incentives Received• Lower Participation Rates	<ul style="list-style-type: none">• Lower Total Load Reduction• Greater Gaps Between Technical, Economic, and Achievable Potential for EE and DR• Programs Competing with One Another For:<ul style="list-style-type: none">○ Customer Enrollments○ Verified Savings

Shortfalls in Integrated Resource Planning (IRPs) Result in Less Demand Side Resources

IRPs are backwards looking, relying on historical performance while demand, DER adoption, and flexibility capabilities are rapidly changing.

IRPs Typically:

- Model Energy Efficiency without interactive effects particularly with Rates and Demand Response
- Subtract Energy Efficiency from forecasted load
- Add Demand Response as a small amount of peak capacity
- Only value the top few hours for peak reduction
- And then model supply to optimally meet demand on the basis of reliability and cost.

The full demand side is not included in the optimization to deliver reliable, least cost power in IRPs.

Lacking Grid Operator Trust Results in Less Demand Side Resources

- Demand reduction forecast, visibility, and real-time control aren't available to the degrees needed.
- Demand performance is typically probabilistic but Operators typically work in binary "on/off's".
- Rightly so, a conservative operating environment, hesitant to deploy things other than tried and true resources they have experience deploying.

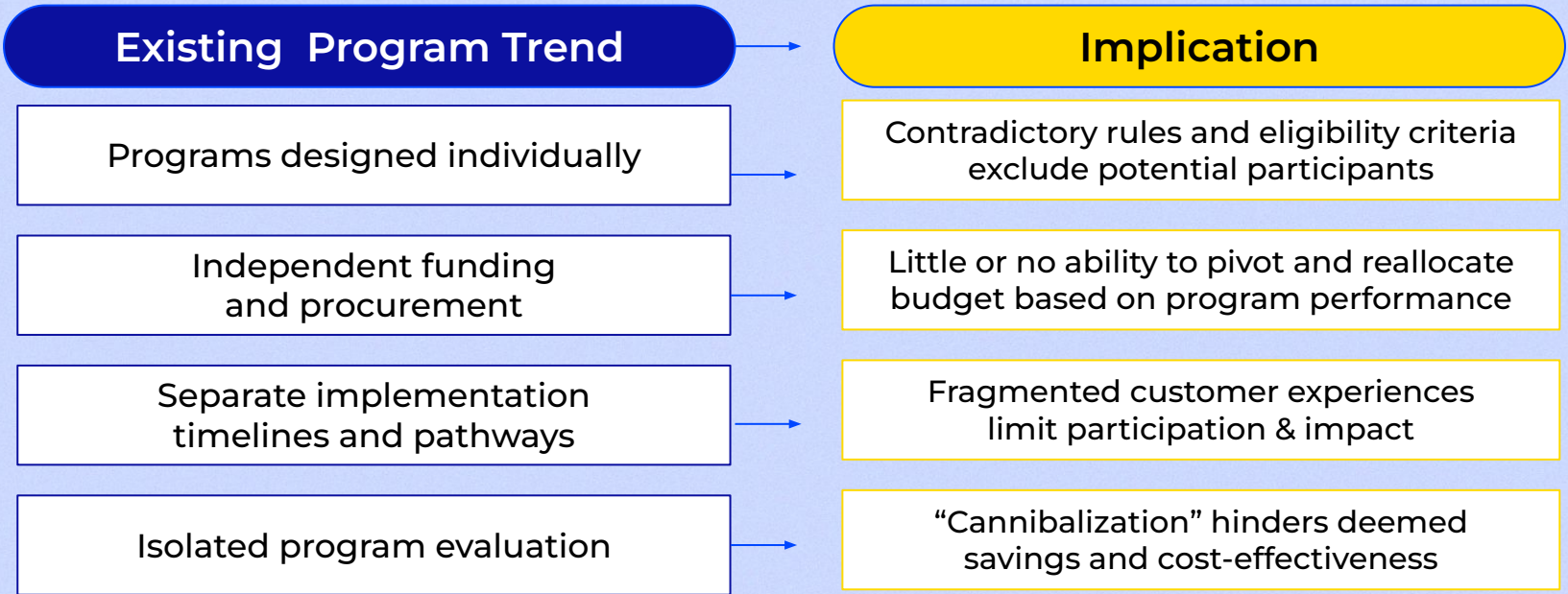
Utility Requirements and Incentives Limit Demand Side Resources

- Rate of Return on capital favor building.
- No incentive to increase the utilization factor of the grid.
- Energy Efficiency Resource Standards (EERS) and Peak Reduction Targets while creating minimums, also unintentionally create ceilings.

MARKET CHALLENGE:

Utility programs aren't reaching their full potential

75-80% of customers are willing to take action to manage their energy, yet the majority of EE, TVR, and DR programs only achieve single-digit enrollment rates



The Demand Stack Framework Can Help Unlock the Demand Side's Full Potential

The Demand Stack is a framework for aligning customer programs, utility operations, and planning so the demand side delivers reliable system value across all hours—not just peak reduction.



What the Demand Stack Does

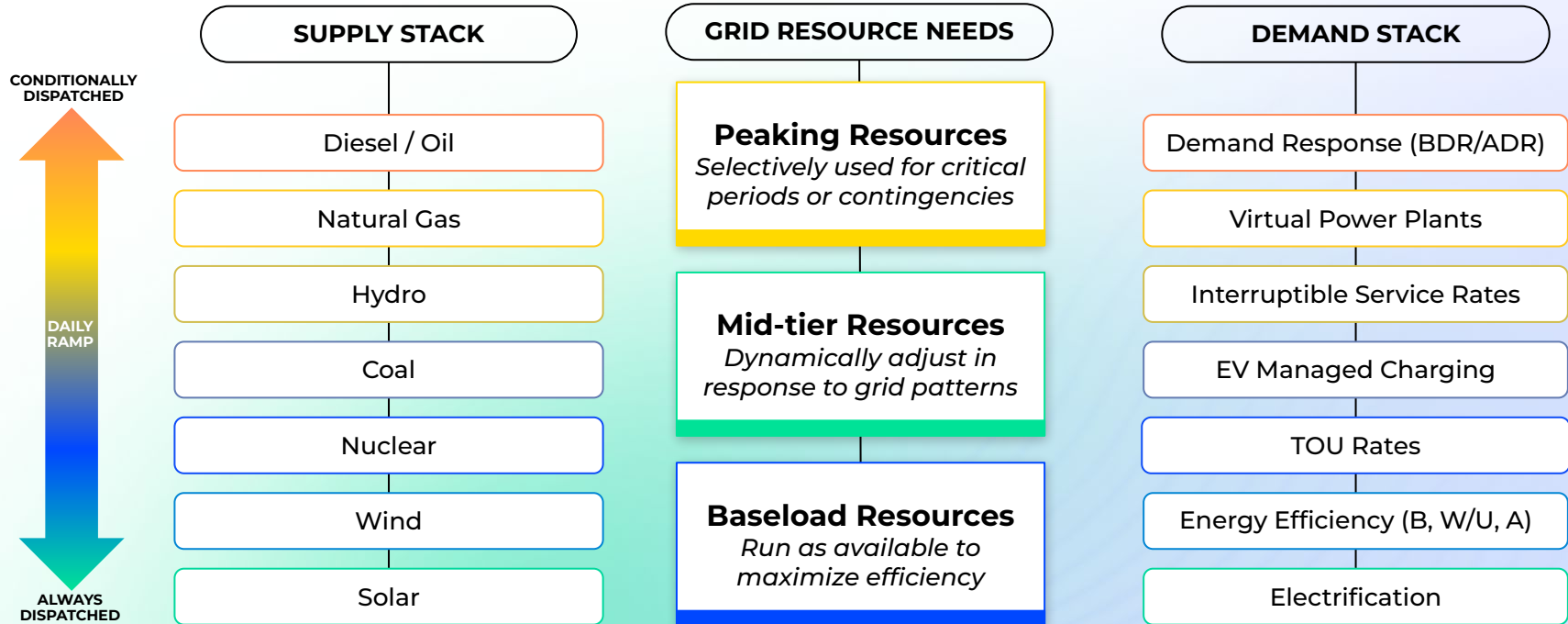
- ✓ Demand resources become system assets, not just customer programs
- ✓ Allows EE, Rates, and DR to deliver when and where the grid needs it
- ✓ Aligns customer programs, grid ops, and planning
- ✓ Delivers greater capacity, energy, and network value —not just peak reduction



*The Demand Stack
shifts demand from
being subtracted from
load to being **designed**
as a resource.*

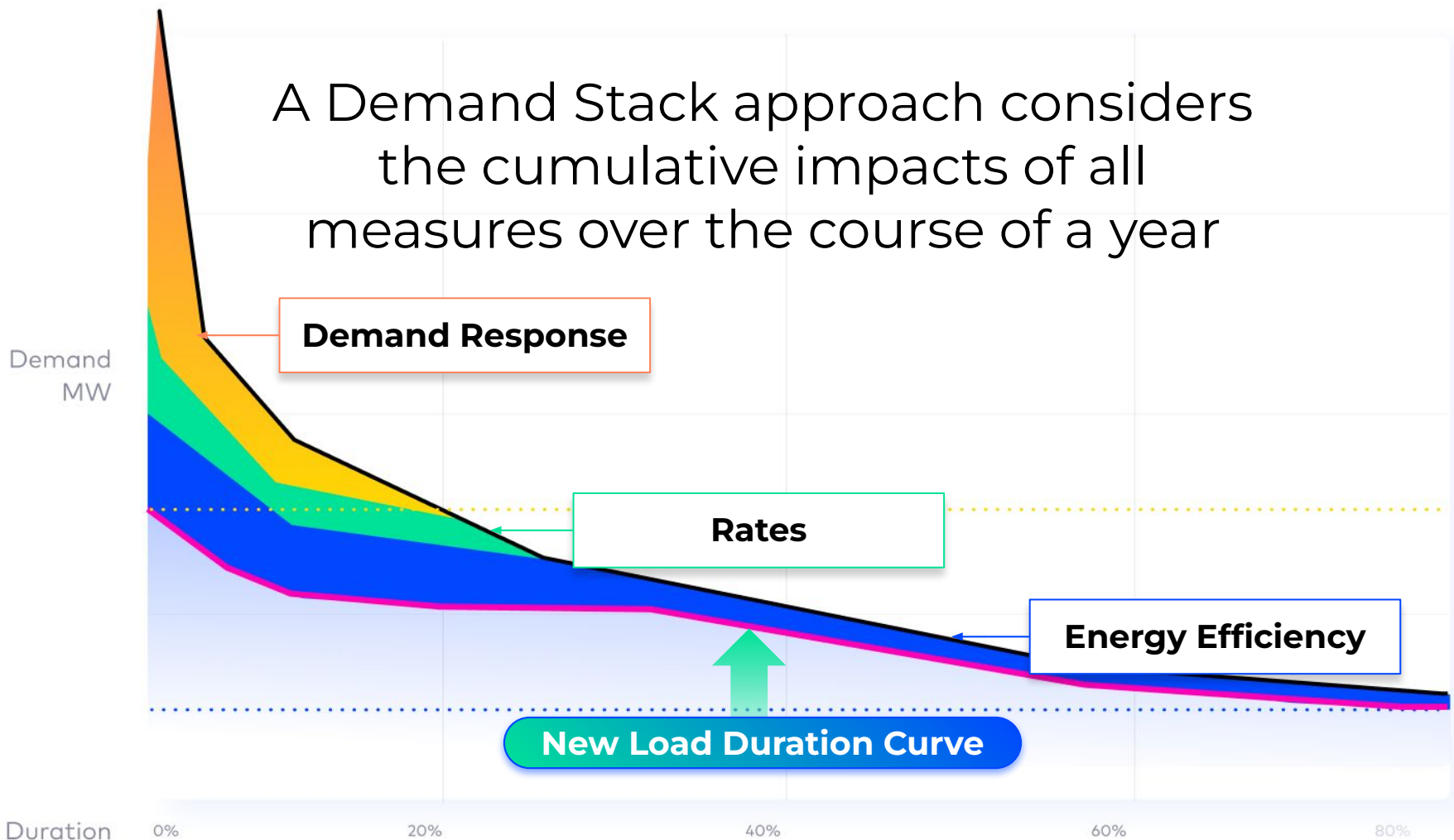
Demand Stack

A coordinated strategy that serves both customer needs and grid requirements



Delivered through a combination of

A Demand Stack approach considers the cumulative impacts of all measures over the course of a year



Regulatory Recommendations to Enable the Demand Stack:

Adjusting Planning Frameworks (IRPs & Beyond)

- Planning, modeling, and evaluation as a portfolio with net hourly outcomes - not siloed programs.
- Peak-only to chronological value going down load duration curve
- Avoid risk asymmetry by derating DSM and not supply
- Extend demand side adjustments in IRPs to T&D planning

Regulatory Recommendations to Enable the Demand Stack: Address Governance and Incentives

- Program-by-program to multi-year portfolio level governance
- Value asset utilization, avoided grid stress, and load factor improvements
- Align utility incentives and reward demand-side performance
- Allow for utility aggregations of demand-side resources and wholesale market participation

Utility Recommendations to Enable the Demand Stack:

Build and Operate the Demand Stack as a Resource

- Manage as a coordinated portfolio resource
- Use supply equivalent metrics for demand and explicitly define them
- Invest in foundational infrastructure and ensure planning, operations, and DSM systems are integrated
- Make demand dispatchable and observable with near-real time visibility and control with fast M&V

Utility Recommendations to Enable the Demand Stack:

Design for Customers, Outcomes, and Capital Efficiency

- Design cohesive customer experience across entire demand side
- Align rates, incentives, and program rules to system-critical hours and locations
- Measure success by utilization, avoided stress, and deferred infrastructure, not enrollment alone
- Frame demand stack to regulators as better execution of approved programs, not a paradigm shift.

What This Means for the Grid

“If we keep planning demand as an adjustment, we’ll wreck the grid trying to build our way out of our load growth problem. If we plan it as a stack, we can optimize instead.”

Planning

“If grid operators continue to distrust demand reductions, they’re never going to be dispatched at scale.”

Operations

“If regulators don’t expand utility incentives to increase asset utilization, no one is going to be able to afford their power bill.”

Incentives

See Uplight's White Paper on the Demand Stack at the QR Code Below:

