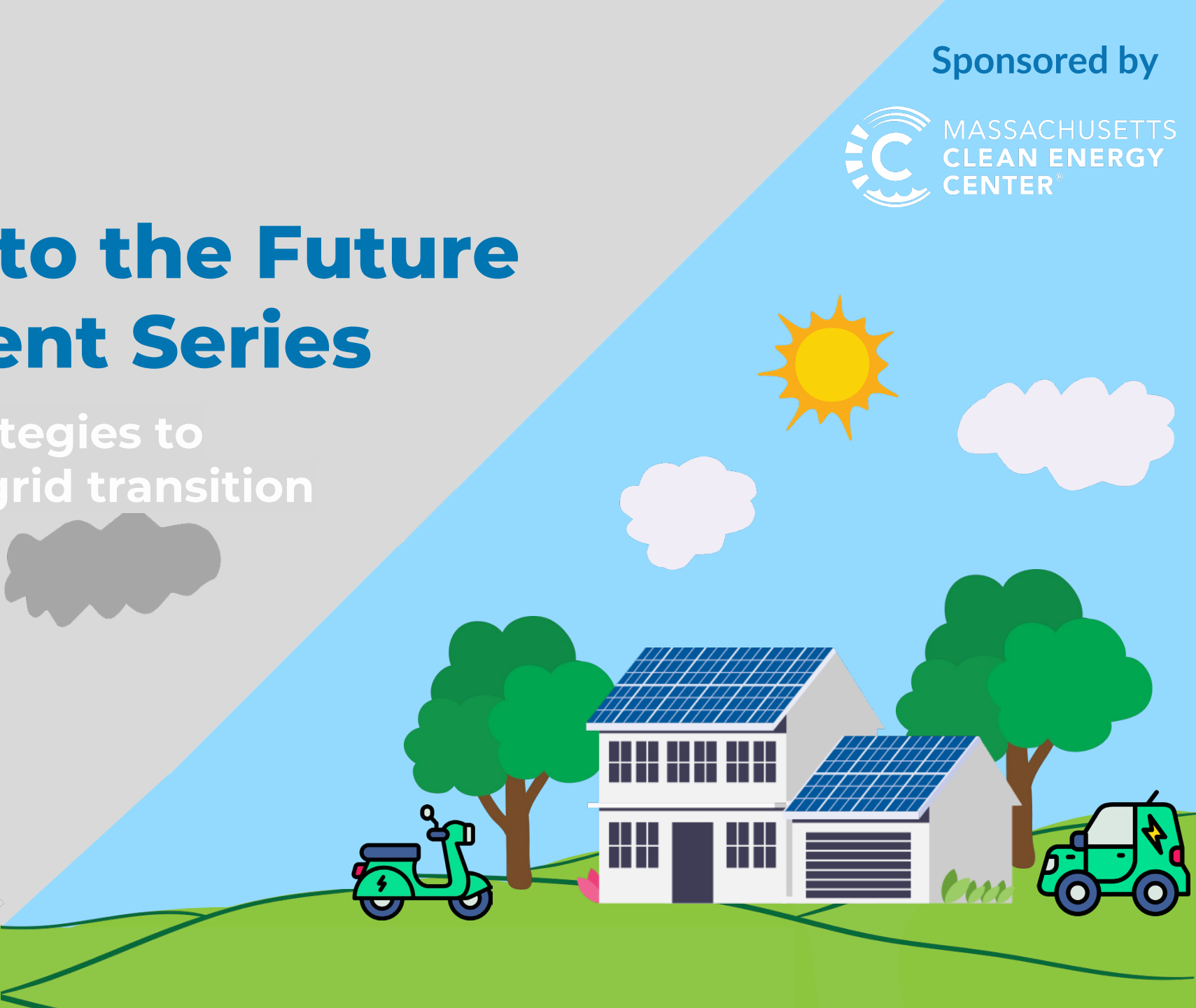


# Transitioning to the Future Grid in MA Event Series

Event 2 | Exploring strategies to  
optimize the grid transition





U.S. DEPARTMENT OF  
**ENERGY**

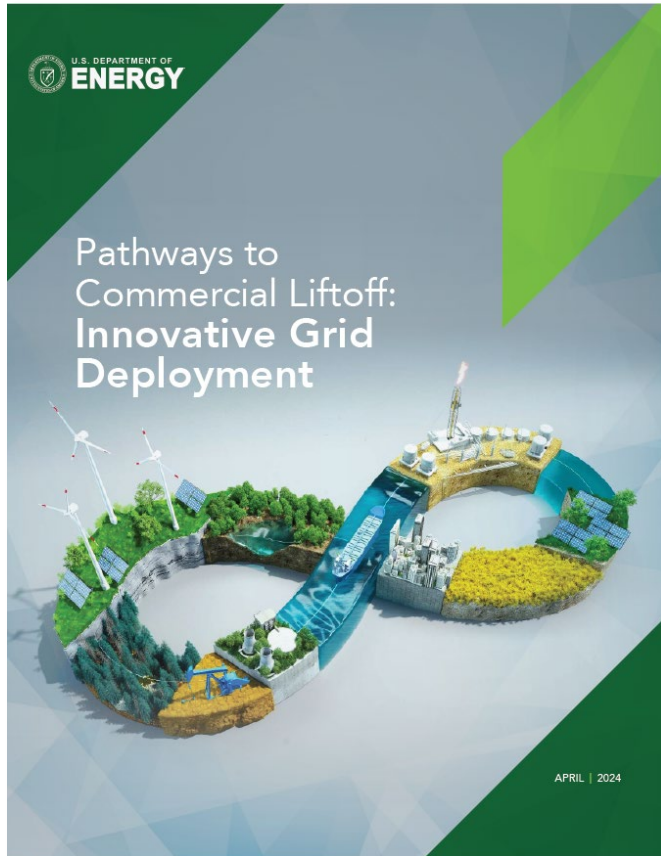


# Pathways to Commercial Liftoff: Innovative Grid Deployment

Ariel Horowitz | Deputy Director Grid Modernization | DOE Grid Deployment Office



# Pathways to Commercial Liftoff: Innovative Grid Deployment



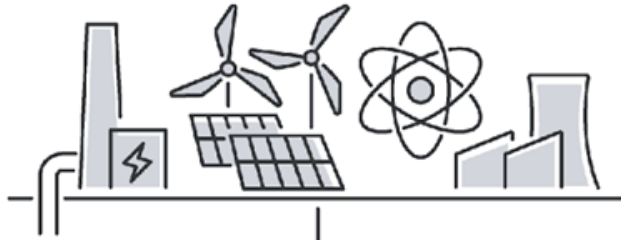
*Download the full report  
or a one pager summary*

More information is available at **[liftoff.energy.gov](https://liftoff.energy.gov)**

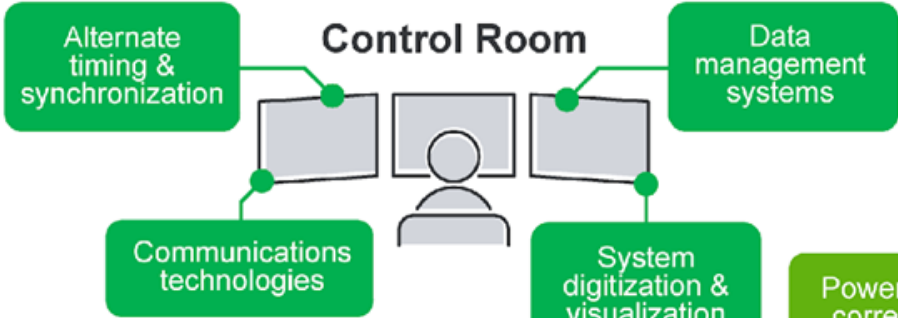
- Technology information
- Case studies
- DOE funding and technical assistance resources

Feedback is welcomed via **[liftoff@hq.doe.gov](mailto:liftoff@hq.doe.gov)**

## Large Generators



## Control Room



## Legend



## Commercial & Industrial Customers



VPPs<sup>5</sup>

DERMS<sup>6</sup>

## Residential Customers



Advanced flexible transformers

Advanced power flow control

Point-to-point HVDC<sup>1</sup> lines

Dynamic line rating

Topology optimization

Advanced conductors

Advanced sensors

ADMS-VVO<sup>3</sup>

Substation automation & digitization

Power factor corrections

Energy storage

ADMS<sup>2</sup>

Smart reclosers

ADMS-FLISR<sup>4</sup>

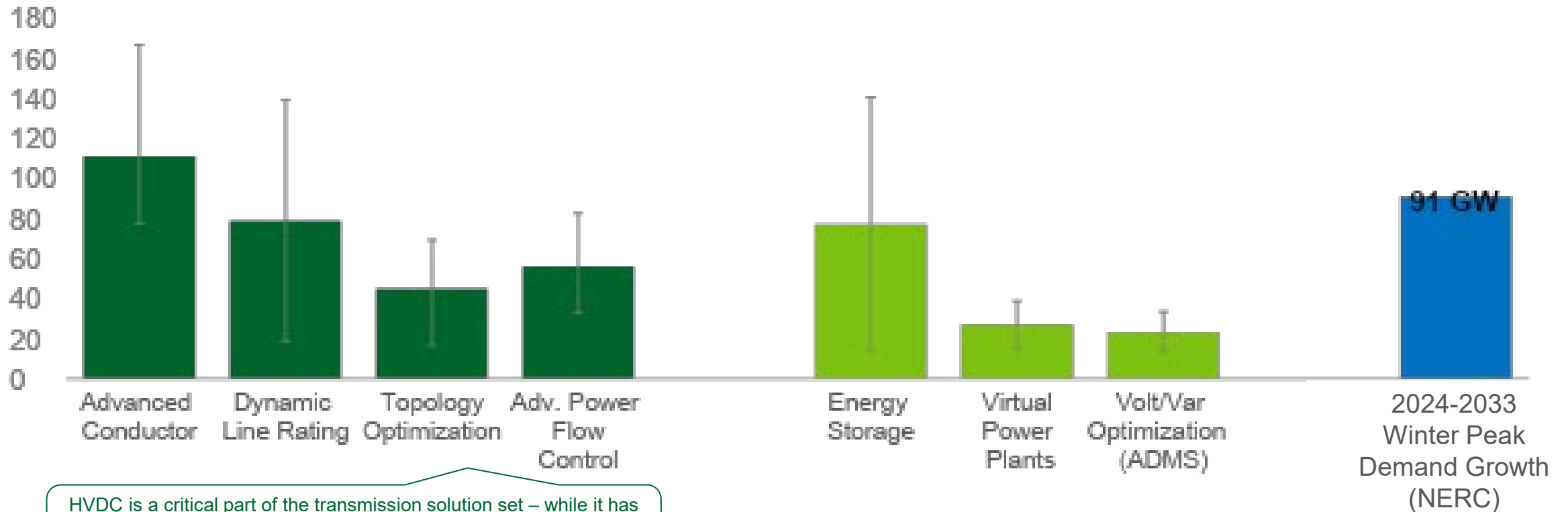
<sup>1</sup> High Voltage Direct Current  
<sup>2</sup> Advanced Distribution Management Systems  
<sup>3</sup> Volt/VAR Optimization  
<sup>4</sup> Fault Location, Isolation, Service Restoration  
<sup>5</sup> Virtual Power Plants  
<sup>6</sup> Distributed Energy Resource Management Systems

## Estimated effective transmission capacity unlocked from bulk system investments

## Estimated T&D capacity relief from non-wires investments

## Expected 10-year peak demand growth

System Increase (GW)



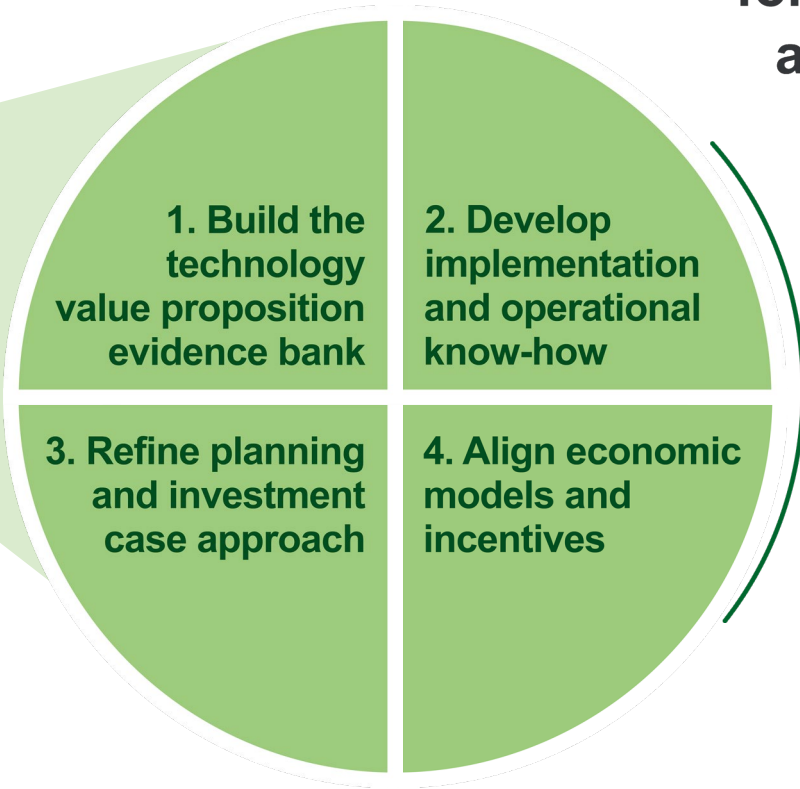
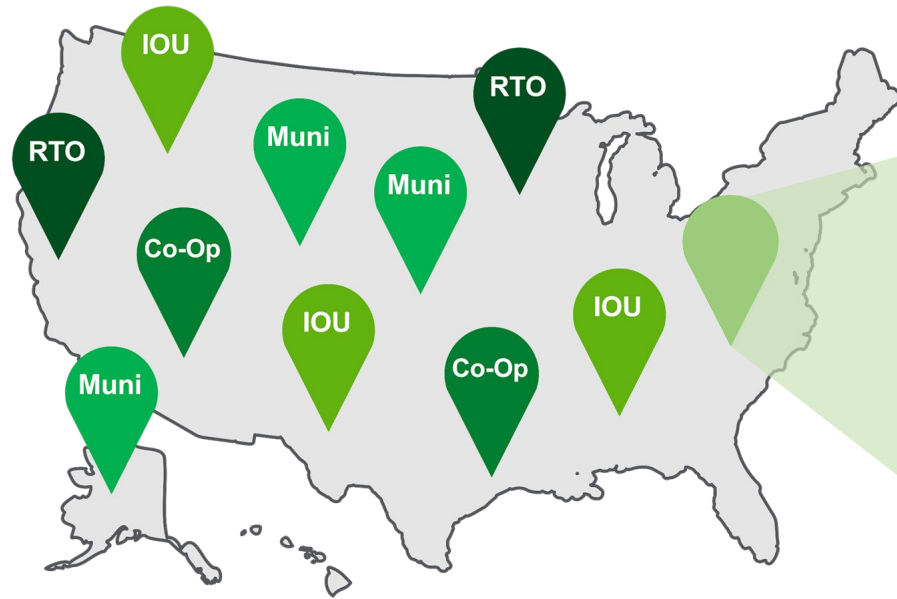
HVDC is a critical part of the transmission solution set – while it has more limited use cases on existing ROW infrastructure, there are strong opportunities for new build corridors not captured here

Represents estimated full potential of deploying at scale in technically and economically feasible locations on the existing grid (as of 2023)  
 Range represents potential outcomes based on technology impact (e.g., DLR can increase effective capacity between ~5-40%)  
 See full report for source and assumption information.

# Achieving Liftoff within 3-5 years

Deploy no regrets solutions today...

...that simultaneously address four priorities for liftoff to de-risk adoption at scale



Liftoff priorities

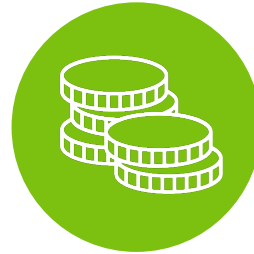
## 6-12 large, in-field deployments

completed for each solution individually or in combination that holistically address Liftoff priorities across a diverse set of grid contexts

These can be deployed without increasing costs to ratepayers



Use existing replacement investments to **proactively upgrade assets** with advanced grid solutions



Develop new **cost allocation** mechanisms



Leverage **federal funding** resources

## Next steps for liftoff

- Send a strong signal that these solutions are a priority to consider:**
  - Expect utilities to **evaluate the viability of advanced grid solutions** to address grid needs
  - Give greater certainty that there is a **clear cost recovery pathway** to incentivize these solutions

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- Evolve norms and processes to **explicitly encourage innovation** to better drive adoption of advanced grid solutions – at the policy, regulatory, and industry levels

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- Leverage federal funding and technical assistance programs**