



# Balancing Business Interests and Safety

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ENERGY STORAGE PROGRAM



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# Purpose and Expected Outcome

**Purpose** – Raise awareness to the impact of the growing number of policies associated with accelerating stationary energy storage technology (EST) development and deployment and their relationship with long standing policies associated with public health, safety and welfare

## Expected Outcomes

- General awareness of the growing number of policy initiatives to accelerate stationary EST development and deployment
- An understanding that maintaining and enhancing public safety is critical to success and has been and will continue to be achieved through long standing policy initiatives
- Recognition there is an important relationship to be nurtured between policies to protect the public safety and policies setting EST capacity goals and incentivizing energy storage projects
- Suggested approaches to eliminate conflicts and harmonize policies in order to minimize the possibility of one or more significant safety incidents involving EST

## Bottom Line

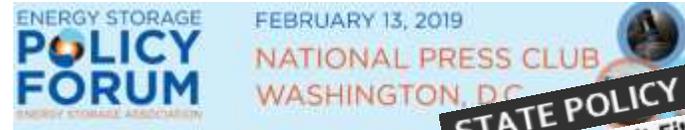
- More timely deployment of EST on an ongoing basis as EST evolves and applications grow in number while ensuring public safety by recognizing the value of all policies and their relationship with one another

# Policies – Definition and Examples

*Policy - a specification, guideline, law, rule, regulation, incentive or simply a proclamation that is intended to influence a specific outcome by creating conditions that would not otherwise occur on their own*



JFK called for the country to "commit itself ... to landing a man on the moon"



**STATE POLICY PANEL**  
One Size Doesn't Fit All for State Storage Action

**Wildfires and Residential Development – Risk Management and Public Policy Opportunities**

Ways to improve fire resistance in wildfire hazard areas.

While the best solution would be to completely avoid building in wildfire hazard areas, this is not practical in urban areas.

Building codes and fire codes can lessen the potential threat of wildfires, but cannot eliminate the threat of damage. No building is fire "proof." In addition, existing homes will remain threatened without proper mitigation.



**Local governments need to develop strong local regulations and programs for homes in wildfire hazard areas if the threat of devastating fires is to be reduced.**

## FIRE PROTECTION OVERVIEW

The Department of Energy (DOE) Fire Protection Program is multi-faceted. It includes published fire safety directives (Orders, standards, and guidance documents), a range of oversight activities, an annual fire protection program summary, **Guidelines (NFPA Codes and standards, CFRs, and DOE Directives (policy statements, Orders, Standards, and Guidance Documents))**

**FERC order opens 'floodgates' for energy storage in wholesale markets**

*The Storage Act of 2011 would have provided a 20% federal investment tax credit for grid-connected energy storage projects, but it did not pass.*

## Using the solar investment tax credit for energy storage

Last updated: 1/2019  
The federal solar tax credit, also known as the investment tax credit (ITC), is one of the best financial incentives for solar in the United States. It allows you to deduct 30 percent of the cost of your solar energy system from your federal income tax. There's no cap on its value. **25% Solar Tax Credit** can help you save nearly \$9,000 on the cost of going solar thanks to the ITC.



**New York City Sets the First Citywide Energy Storage Target**  
States have them. So why not cities?

While 29 states and the District of Columbia currently have Renewable Portfolio Standards (RPS)—goals for power producers to provide a certain amount of power from renewable sources by a specific date—a growing number of states are also instituting standalone targets and mandates for energy storage procurement. Sources: Energy Storage Association, North Carolina Clean Energy Technology Center, Lawrence Berkeley National Laboratory.

—Copy and artwork by Sonal Patel, associate editor, POWER magazine.

***Policies supporting EST are all related and must therefore be coordinated so they can work together to achieve common goals***

# No Policies – a ‘Pure’ Market

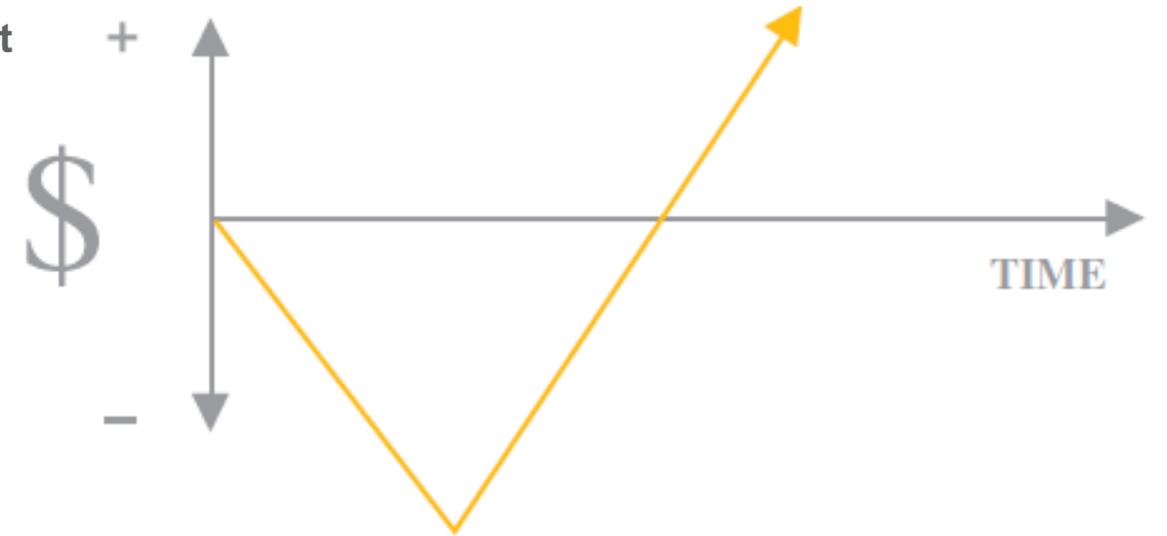
The private sector invests in technology development and deployment without additional help...

- When a need or opportunity arises
- When overall benefits outweigh the size of the investment
- To maximize profits and generate income for the company
- To enhance their corporate image

When a free market system works...

- The financial benefits exceed the costs incurrent making the investment (e.g. they make money)
- The technology is deployed in a timely manner with little or no adverse impact
- The time to market is short and the ramp rate after market introduction is steep
- No policies, incentives, tax breaks, funding support, etc. are needed

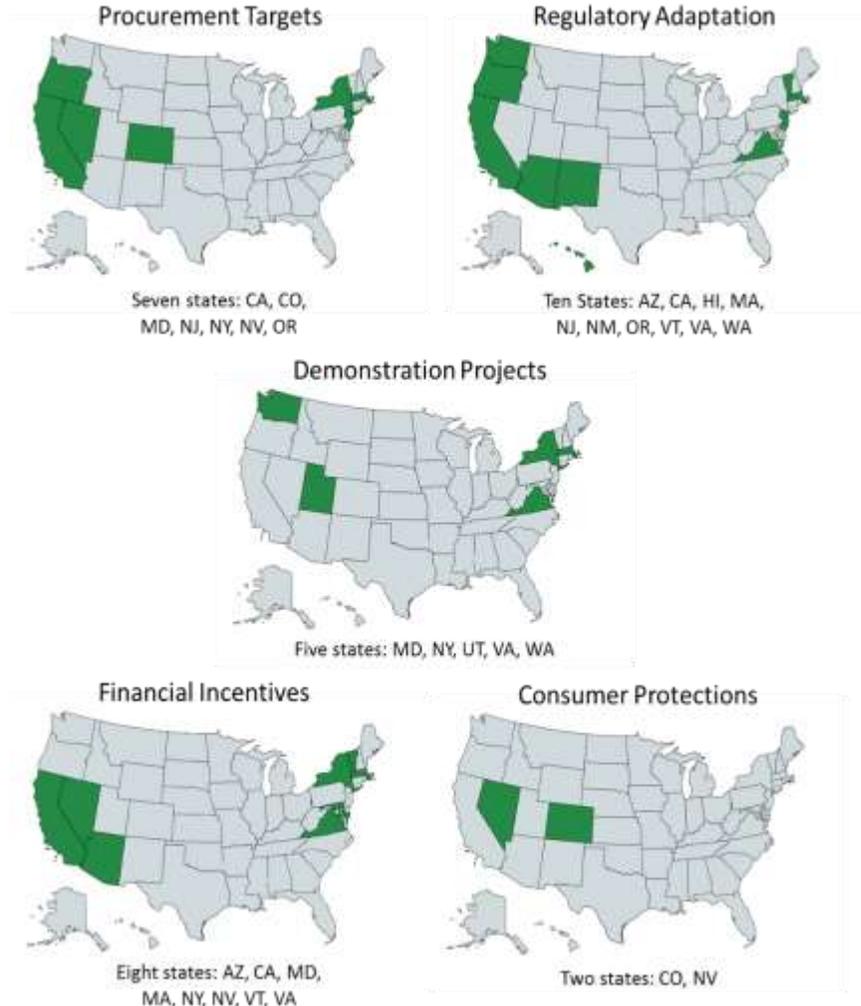
Are safe energy storage technology deployments likely to occur faster in a free market system?



# Energy Storage Policy Types

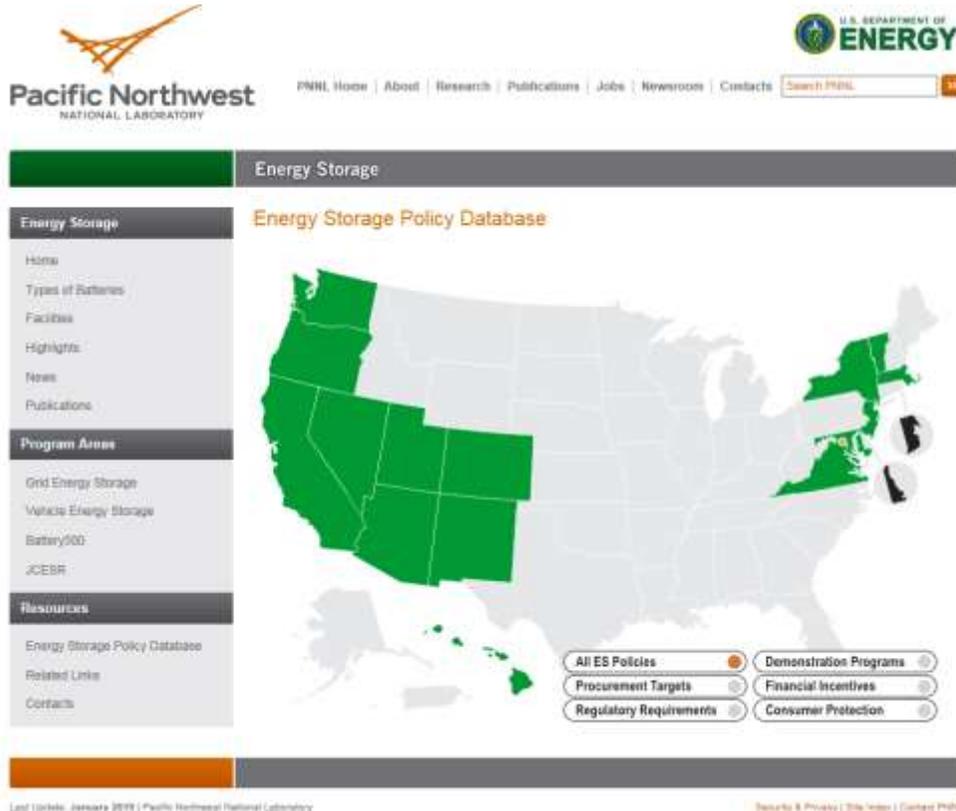
Uncertainties about the value proposition of EST and its role, associated costs and lack of wide deployment experience are driving development and implementation of EST policies...

- Procurement targets – state IDs opportunities to apply EST that are not likely to be satisfied through the normal course of business
- Regulatory adaptation – state actions to recognize historical practices that are not as effective in valuing EST (planning, modeling in IRPs, flex investments, analysis, site evaluation process)
- Demonstration programs – state authorizes and can assist in funding EST to help utilities get an operational understanding of EST
- Financial incentives – state funded programs to provide \$\$ or tax rebates to customers who install EST
- Consumer protection – state requirements guaranteeing protection to consumers who install EST



# EST Policy Development

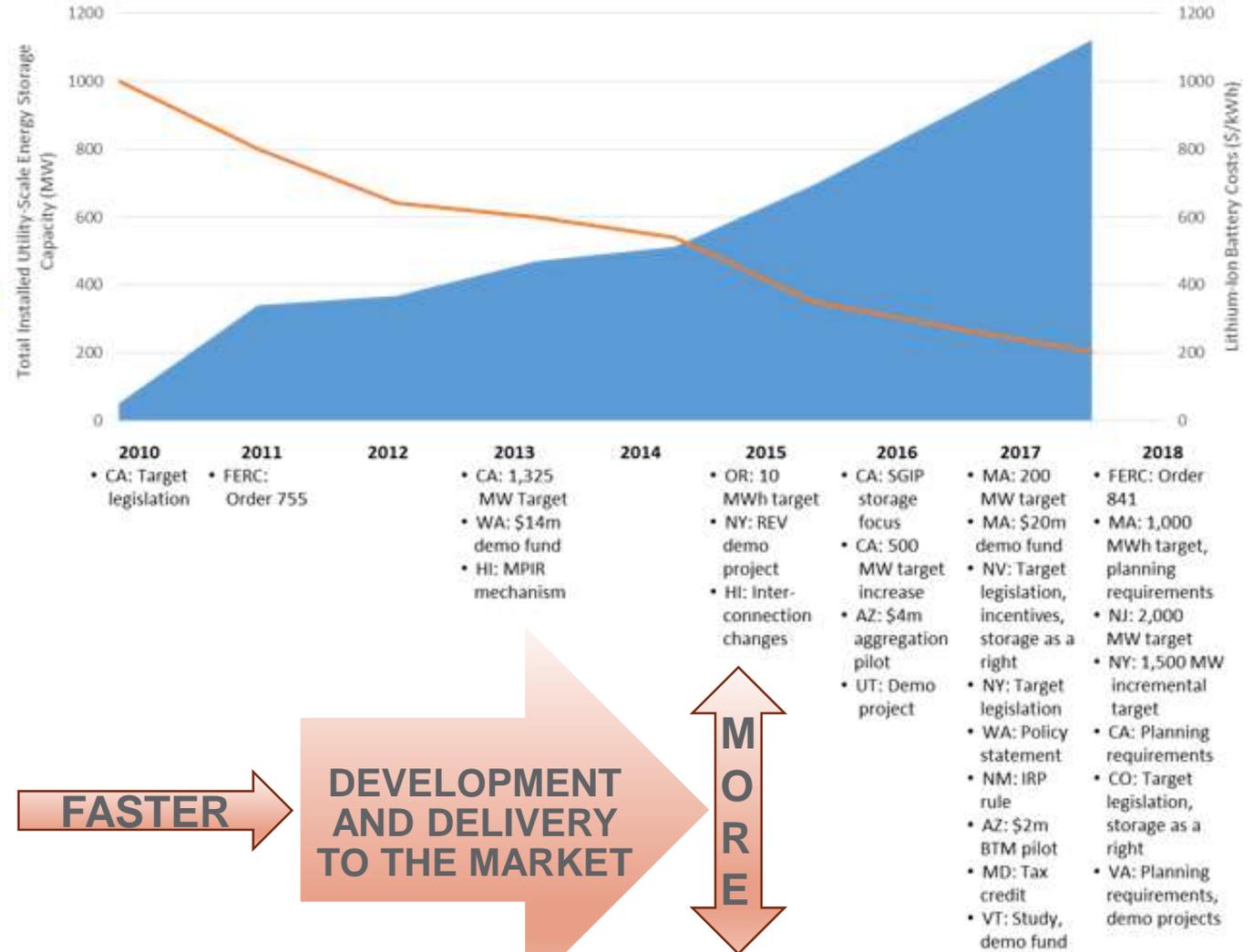
*How many different policies, how much \$\$, how much capacity today, next week, next year?????*



The screenshot shows the Pacific Northwest National Laboratory website's Energy Storage Policy Database. It includes a navigation menu with sections like Energy Storage, Program Areas, and Resources. A map of the United States highlights several states in green. Below the map are filters for 'All ES Policies', 'Demonstration Programs', 'Procurement Targets', 'Financial Incentives', 'Regulatory Requirements', and 'Consumer Protection'. The footer of the page reads 'Last Updated: January 2019 | Pacific Northwest National Laboratory' and 'Security & Privacy | Site Index | Contact PNNL'.

<https://energystorage.pnnl.gov/regulatoryactivities.asp>

Figure 2: Storage Policies, Installations, and Costs Since 2010



Source: A Review of State-Level Policies on Electrical Energy Storage, Jeremy Twitchell

# Safety Policy and Business Interests

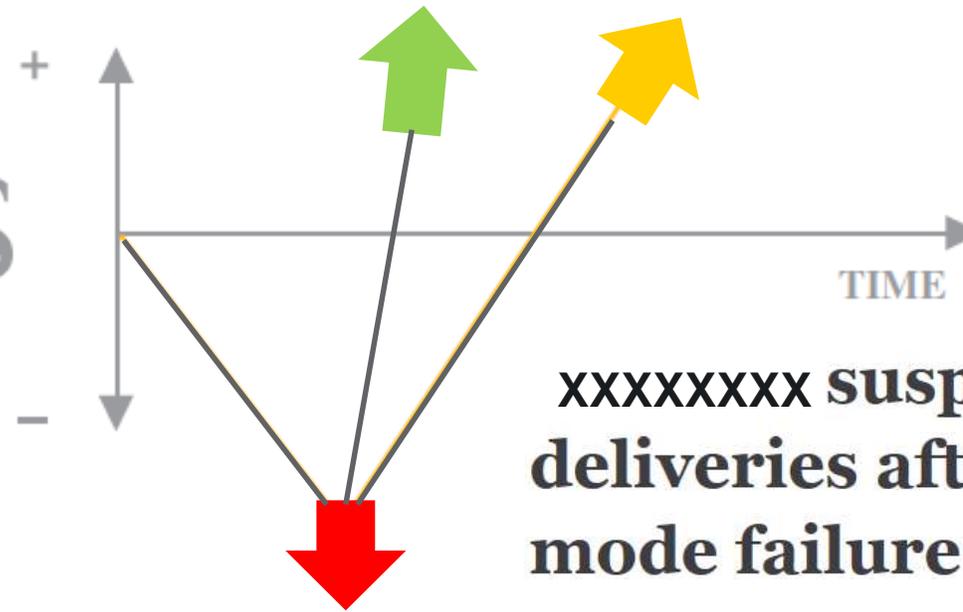
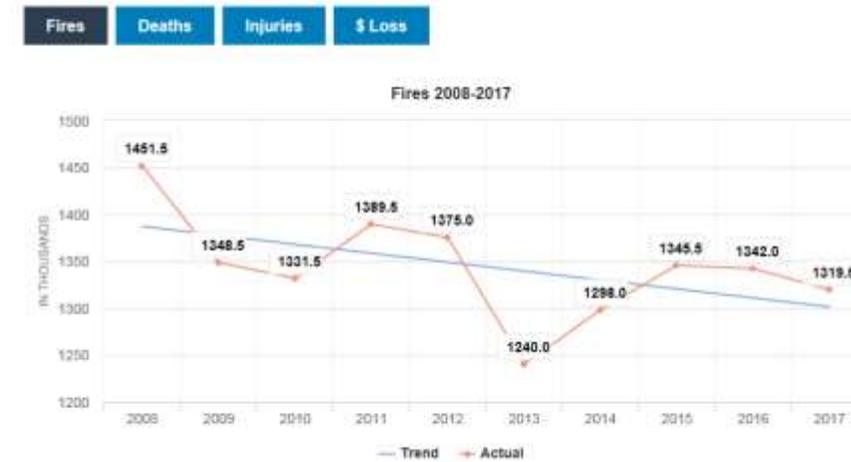
## Business considerations and safety policy

There is a need to balance interests to protect public health, safety and general welfare as they relate to the construction of the built environment and drivers to accelerate technology development and deployment

1. If not balanced a safety or economic failure is more likely
2. Investment ROI is enhanced when safety policies are considered early on in technology development
3. Establishing policies to incentivize development and deployment of technology while addressing safety can help boost the ROI

		Trend	
Fires	1,319,500 in 2017	-6.2%	↓
Deaths	3,400 in 2017	+9.6%	↑
Injuries	14,670 in 2017	-15.8%	↓
\$ Loss	\$23.0 billion in 2017	+12.0%	↑

\* from 2008

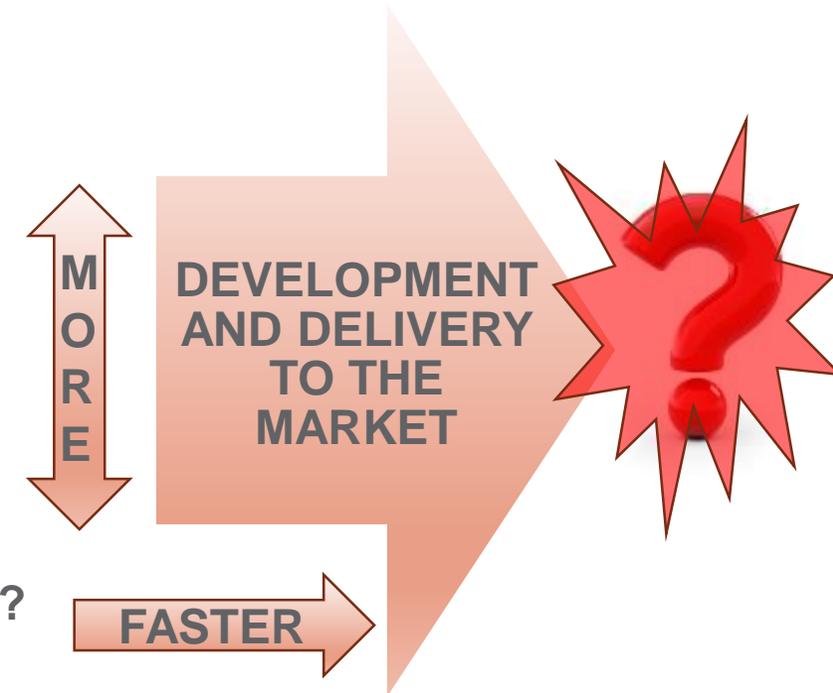


xxxxxxx suspends deliveries after battery mode failure incidents

# Consideration of Public Safety Policy

In striving to increase the number of EST deployments at a faster rate the relationship of those acceleration policy initiatives with safety policies needs to be recognized and consider key safety-related questions that impact achieving acceleration goals

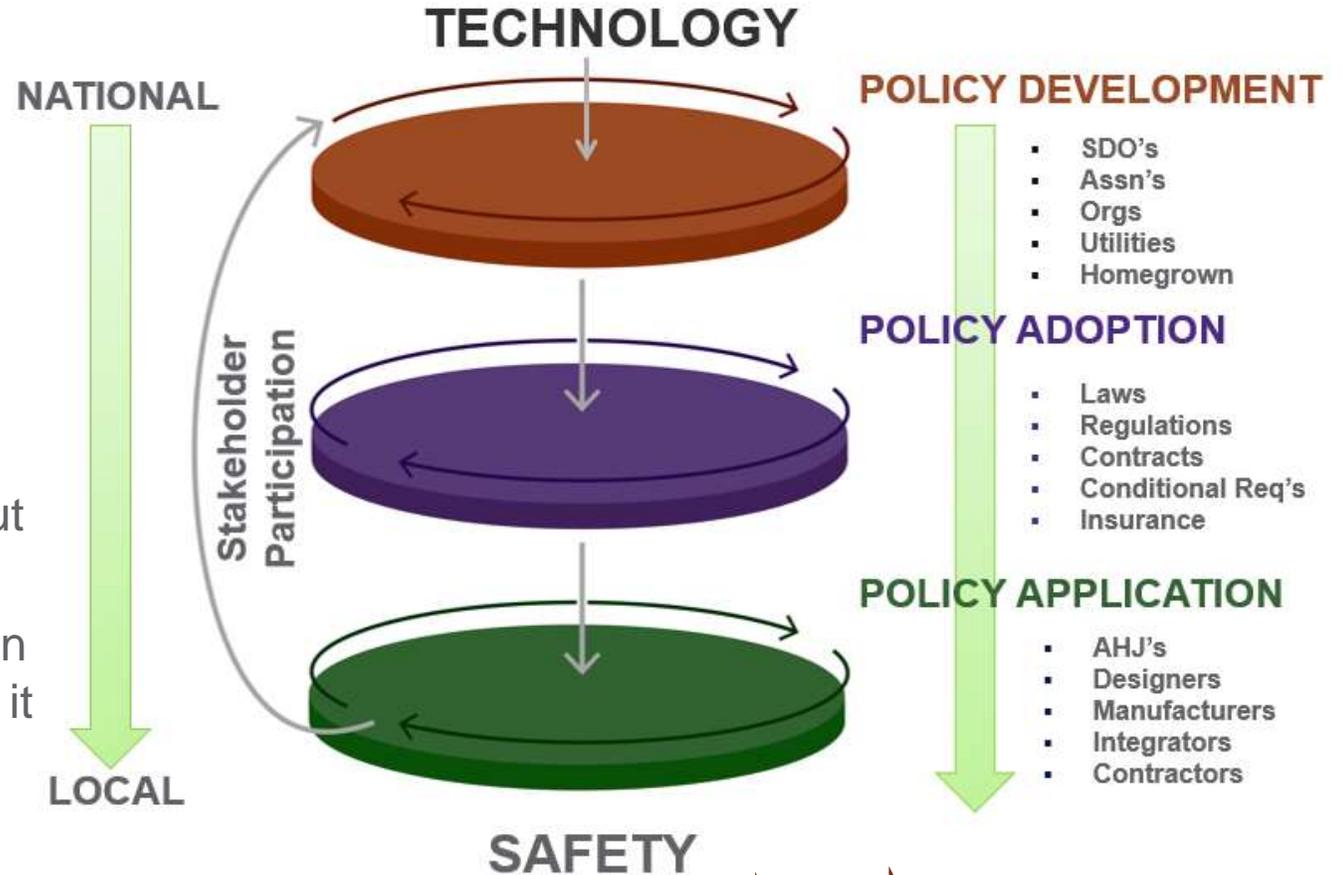
- What is safe (or not safe)?
- How does one assess if something is or is not safe?
- What criteria are used to make an assessment?
- How are criteria developed, adopted and applied?
- When is testing or a field assessment needed?
- Who can perform testing or a field assessment?
- Who can designate something as safe?
- How can they apply the results of an assessment?
- Who is on the front lines and do they have needed training?
- Can the answers change over time?
- Why would the answers change?
- How are new answers developed and implemented?



# Public Safety Policy Infrastructure

*“What are safety codes and standards? I did not know they existed and am now having to play catch up. Can you help me understand what they are, how they affect me and how to comply” - ESS manufacturer*

- Safety policy and the safety infrastructure has a specific purpose
- Ensuring public safety need NOT cancel out or adversely impact other polices
- The safety infrastructure can support EST in concert with other policies if you know how it works and when and how to participate



# Safety Infrastructure – Development, Adoption and Deployment

- Proactive and timely involvement in development of standards and model codes ensures criteria to document and validate EST safety exist
- The resultant standards and model codes need to be adopted in a timely manner
- Those involved in documenting and validating compliance with standards and codes need training and support
- Those implementing projects or responding to incidents need information and support to do their jobs



## State adoptions of ICC IFC

2018 - WY

2015 – AL, CA, CT, ID, IW, NJ, NY, ND, OH, OK, PA, SC, SD, UT, WA

2012 – AK, AR, DC, GA, IN, KY, MN, MS, OR, TN, VA

2009 – IS, NC

2006 - KS

2003 - NM

1. *Policies to foster EST development and deployment can be more successful when existing safety regulations are updated in a more timely manner*
2. *Until they are updated a void exists but through collaboration there are ways to facilitate documenting and verifying installations as safe until they are updated and adopted*

## NEC® in Effect 1/1/2019



2017 NEC® - 27  
 2014 NEC® - 16  
 2011 NEC® - 1  
 2008 NEC® - 3  
 County/Municipality NEC® regulation only - 3

# Coordinated Policy Design – Considerations

In light of various policies to accelerate EST development and deployment and ensure safety can we collectively.....

- Educate policy makers about the ability of standards and codes and the public safety infrastructure to document and validate safety to respond to acceleration policies
- Identify the technical tools and/or resources needed by the public safety infrastructure and then develop and provide them
- Consider the differences in the ability to respond based on utility involvement in development of needed resources and implementation of EST projects
- Explore all the technical questions related to defining what is and is not safe and support research to secure the necessary answers and update standards and model codes
- Identify more effective, universal and cost effective ways to document and verify that an EST is safe and that it remains safe during its life cycle
- Find more effective ways to develop updates to standards and model codes that can be more readily adopted and applied
- Involve and collaborate with all relevant stakeholders to establish and then realize a cohesive set of policy goals that collectively address time, business interests and public safety

# Solutions

- Identify all acceleration and public safety policies and review their relationships to and impacts on one another as well as any conflicts - **find the friction points**
- Develop a coordinated plan of action to adjust existing or establish new acceleration policy goals so they are better informed by field experiences and the status of the safety infrastructure – **adjust speed expectations**
- Enhance the infrastructure associated with safety policy in a coordinated and cohesive manner involving all stakeholders – **provide resources and support**
  - ✓ Develop proposed changes to standards and model codes along with the rationale and supporting documentation
  - ✓ Foster more timely adoption and application of those changes
  - ✓ Support activities to help streamline how to document and verify compliance with public safety policies
  - ✓ Develop and disseminate educational materials and training to all EST safety stakeholders
- Monitor experiences and adjust as warranted – **measure friction, adjust speed and adjust resource and support initiatives**

# Final Points/Summary

- Policies to accelerate EST development and deployment are increasing in number and expectations and can ‘speed things up’ in comparison to a ‘free’ market
- Policies to protect the public safety and investments in the built environment tend to be more conservative and more challenging to update to address new technology
- Criteria in standards and model codes can be composed to support EST applications and their adoption accelerated through.....
  - Ongoing collaboration by all stakeholders in the development and adoption of standards and model codes to address EST safety and the documentation necessary to support any proposed criteria
  - Willingness to participate in and support the development and adoption process, accept the results and remain involved over time
  - Collaboration in equipping all stakeholders associated with the safety infrastructure with the necessary resources and tools to implement EST projects
- Long term success measured as achieving all goals can be achieved.....
  - Through a more complete understanding by all stakeholders of each others goals and the relationships between and interactions of all policies
  - Involvement of all stakeholders in crafting coordinated strategies that effectively balance time and public safety
  - Participation by all stakeholders in the development and deployment of actions to implement those strategies

# Acknowledgment

**Dr. Imre Gyuk, DOE – Office of Electricity  
Delivery and Energy Reliability**



*Mission – to ensure a resilient, reliable, and flexible electricity system through research, partnerships, facilitation, modeling and analytics, and emergency preparedness.*

<https://www.energy.gov/oe/activities/technology-development/energy-storage>

# Q/A and Further Information

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