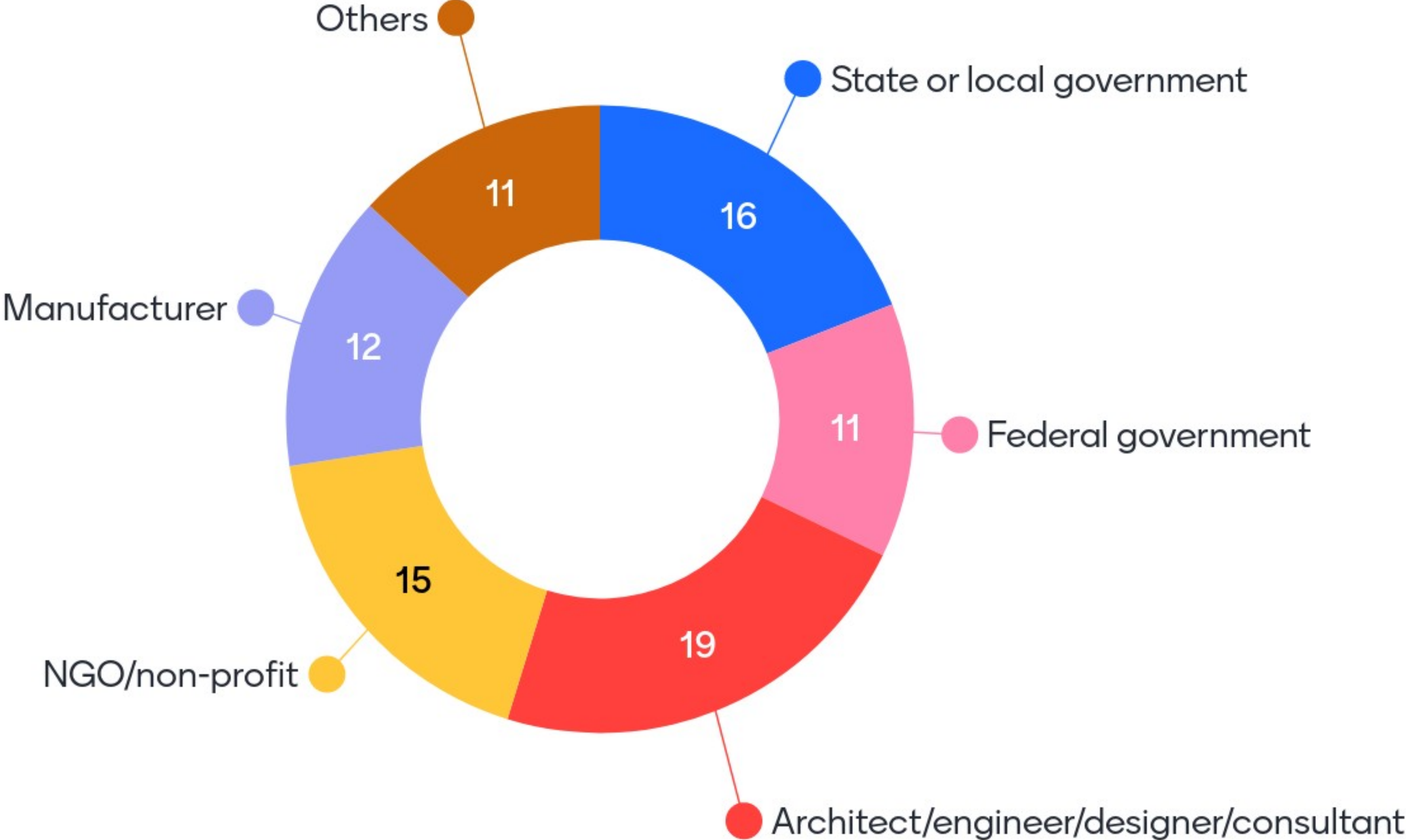


# Building Performance Standards

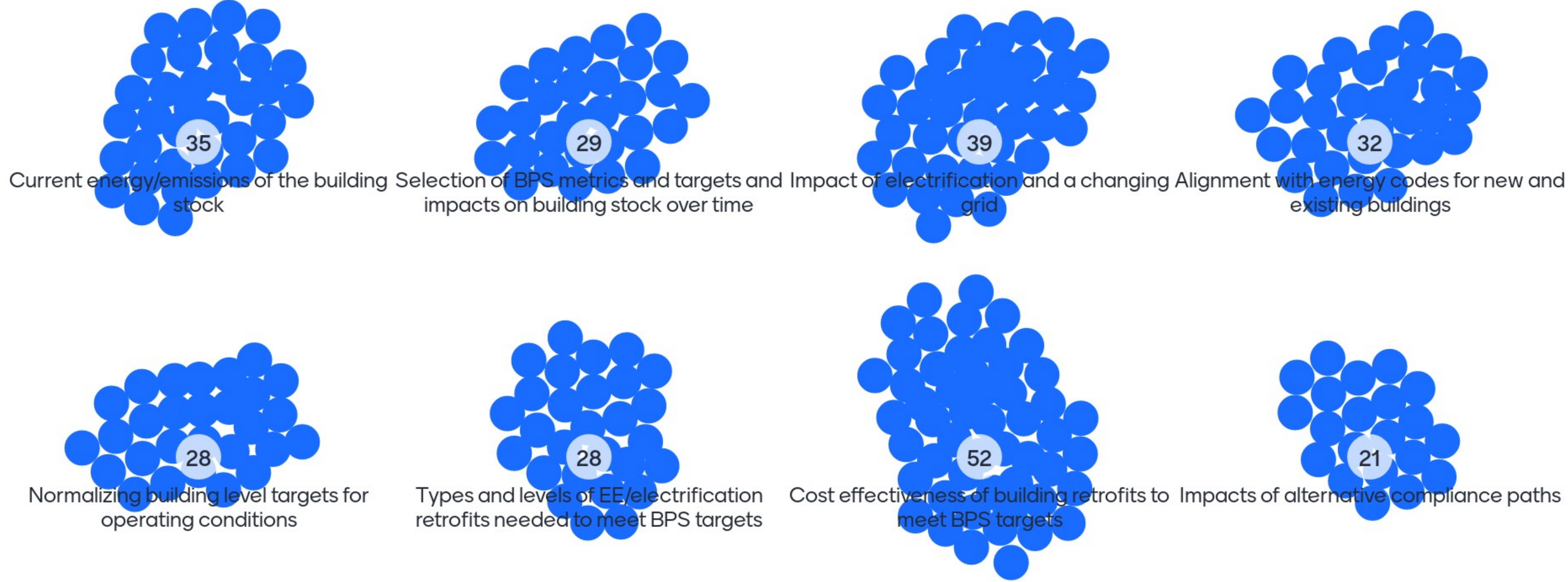
Setting Goals and Metrics



# What most closely aligns with your organization?



# Which of the following analysis topics are most challenging and would benefit from technical guidance and assistance?



# What are other important analysis topics for BPS?

improvement over time.

Embodied carbon

How to incorporate equity, grid optimization, and resilience into BPS.

Dealing with historic buildings  
Impact of COVID 19 on 2020 and 2021 energy usage

How do BPS affect low-income populations, and how to make it more cost-effective for those communities?

ERI has a standard for assessment. does BPS?

Combining metrics: how best to use multiple metrics to drive efficiency and decarbonization?

Bill increases  
Policy/legislative approaches

high performance building alternative

# What are other important analysis topics for BPS?

Capacity building/training needs

grid capability especially the renewable capacity

Impact on freedom for end users

Time differentiated use --impacts emission, cost, peaks, grid tresses

user interface

8760 metrics

Comparative performance

co-benefits - health, etc

Carbon value of faster action.

# What are other important analysis topics for BPS?

human behaviour

Demand flexibility

Delivering occupant comfort and health

Cost-effectiveness and why it matters to building owners who aren't paying utility costs. (non-occupant owners)

micro grids

Target improvement level / goal over time.

incremental changes / performance improvements

Sites surrounding buildings, ecological considerations.

Retrofit feasibility

# What are other important analysis topics for BPS?

Unmetered energy usage (like propane and fuel)

Occupant comfort surveys

What's needed to meet 1.5C climate goals - and how delayed action requires more drastic action later

structure of programs that work

Role of solar, storage, geothermal heat pumps going forward.

Cleanliness of electricity generation

How to increase electrical infrastructure to support more complete electrification.

Push back from natural gas utilities/industry for electrification

Peak demand

# What are other important analysis topics for BPS?

Non-energy performance tracking such as water, waste, IAQ

How to broadcast benefits

Not sure if it applies here but availability of utility data/how to get it/streamline it particularly in multi-tenant (submetered) buildings

combinations of cost effective measures

micro grid

human wellness

Buildings not in CBECS/E\* such as museums, stadiums, arenas: Also need more normalization abilities beyond ASHRAE Std 100-2018 See my blog [skoru.com/cultural-heritage-and-museums---mind-gap](http://skoru.com/cultural-heritage-and-museums---mind-gap)

acceptability throughout the construction industry

Designing buildings for people, not dollars



# What are other important analysis topics for BPS?

the analyses we need from DOE is really more granular analysis of deep energy retrofit AND LOTS of DER (storage + battery + smart controls/load flex) impacts to bldg. owners and the actual benefits to grid.

how to find contact information for compliance (hard to get the right contacts who know energy use and characteristics for buildings)

LOW GWP refrigerants

Energy storage assessment or measurements

Deep energy retrofit+ Decarbonization of Existing buildings integrated with solar + storage+ smart controls for load flex = ZERO CARBON (operating at least 0

Multi-tenant buildings with multiple energy meters

see chat

embodied carbon limits

Implementation

# What are other important analysis topics for BPS?

water, SIR, renewables implementation

changing power grid + alternate energy storage options

Implementation of design and best practice with available material with cost effective methods for BPS goals.

how to incorporate the age and condition of the building in recommending retrofit vs. using the same money to incentivize replacement.

work with stakeholders to carry out unbiased analysis for each state on electrification impact on buildings and source energy options.

quantum simulations

Quantum simulations for grid optimizations

# Questions on technical approaches? Preferences for particular tools and methods? What are the equity considerations?

Hour of year analysis (8760)

Simulations require data maps not always available

What are the units for BPS? What are we measuring?

DOE should continue performing analyses such as CBECS, RECS, and others and provide industry with data.

To what detail are the empirical models validated? ...and re-validated?

Building models for existing buildings that are representative of a city or state are complicated and expensive to do. It would be good to get help with that.

Are there plans to create simulations for energy intensive buildings like casinos, data centers, and restaurants?

RETScreen and eQuest are good tools.

adoption of NMEC as a standard for existing building energy efficiency, rather than spending weeks with in field M&V

# Questions on technical approaches? Preferences for particular tools and methods? What are the equity considerations?

How frequently does the analysis need to be updated? or once and done?

More frequent CBECS surveys

consensus measured input data

In weatherization (single family, manufactured, multifamily) we've been forced to look at blower door, ACH and duct flow/leakage measurements, as well as pushing benchmarking, etc in Building Operator Certification (multifamily and commercial)

Do we need to establish a standard for tools (such as Energy Star Portfolio Manager) for BPS for residential and commercial buildings to support local governments and states?

I would like to see a comparison of mixed fuel buildings with high-efficiency appliances versus electrical-only buildings in these analyses.

I'm wondering if there have been studies across sort of cultural or different communities in how the building types might be used differently? Or if they are?

Some technical tools for modeling are not financially viable for some as much data is hiding behind paywalls. How can these tools be provided to more individuals?

Coordination of publicly available;able documents, someone to read the blueprints that were approved or have someone type in the app details for permit approval process.

# Questions on technical approaches? Preferences for particular tools and methods? What are the equity considerations?

Is the expense and complexity of models worth the outcome compared with a heuristic empirical approach?

Cost effectiveness most important

allow use of more approved / validated building simulation tools/ engines

I would love to see published EUI data for existing and new buildings

Improvements to code compliance for new construction so that we have better data moving forward.

financing software development could be live updating. (many localities use project dox) all access pass by authority?

Consider: what ARE the indicators for equity- or "equitable outcomes", and how would those outcomes be measured in any BPS?

CBECS needs to stop commingling building types. It needs more unique bldg types for us to have benchmarks for an extended range of bldgs. And w/o an e\* option we will need a way to normalize these bldgs.

For multi-family buildings, need to break out buildings with central HVAC/water heating systems versus distributed systems in each dwelling unit.

# Questions on technical approaches? Preferences for particular tools and methods? What are the equity considerations?

What geography is best for comparing buildings (within climate zone? city limits? state? census division? national?)

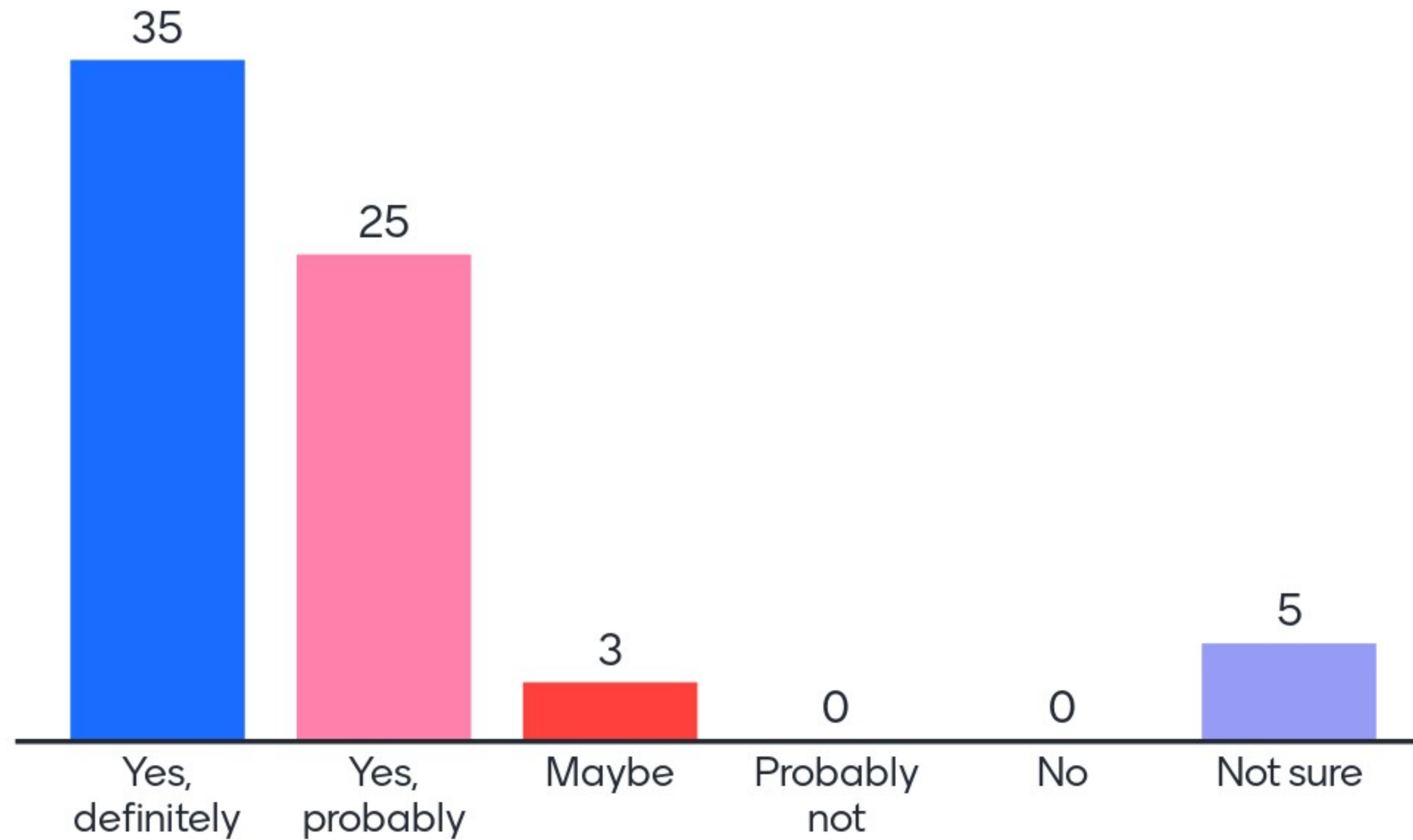
how do you set the incremental performance target? How do you set the goal that is not arbitrary?

Modeling that shows how the timing of retrofits impacts carbon benefits. Connect retrofits and carbon, but with a value assigned to action on different time scales

YES please break out data by more granular building types and in climate zones

try focusing first on PUBLIC sector building types

Would it be helpful to develop a "cookbook" of standardized analysis approaches? (i.e., would you actually use it?)



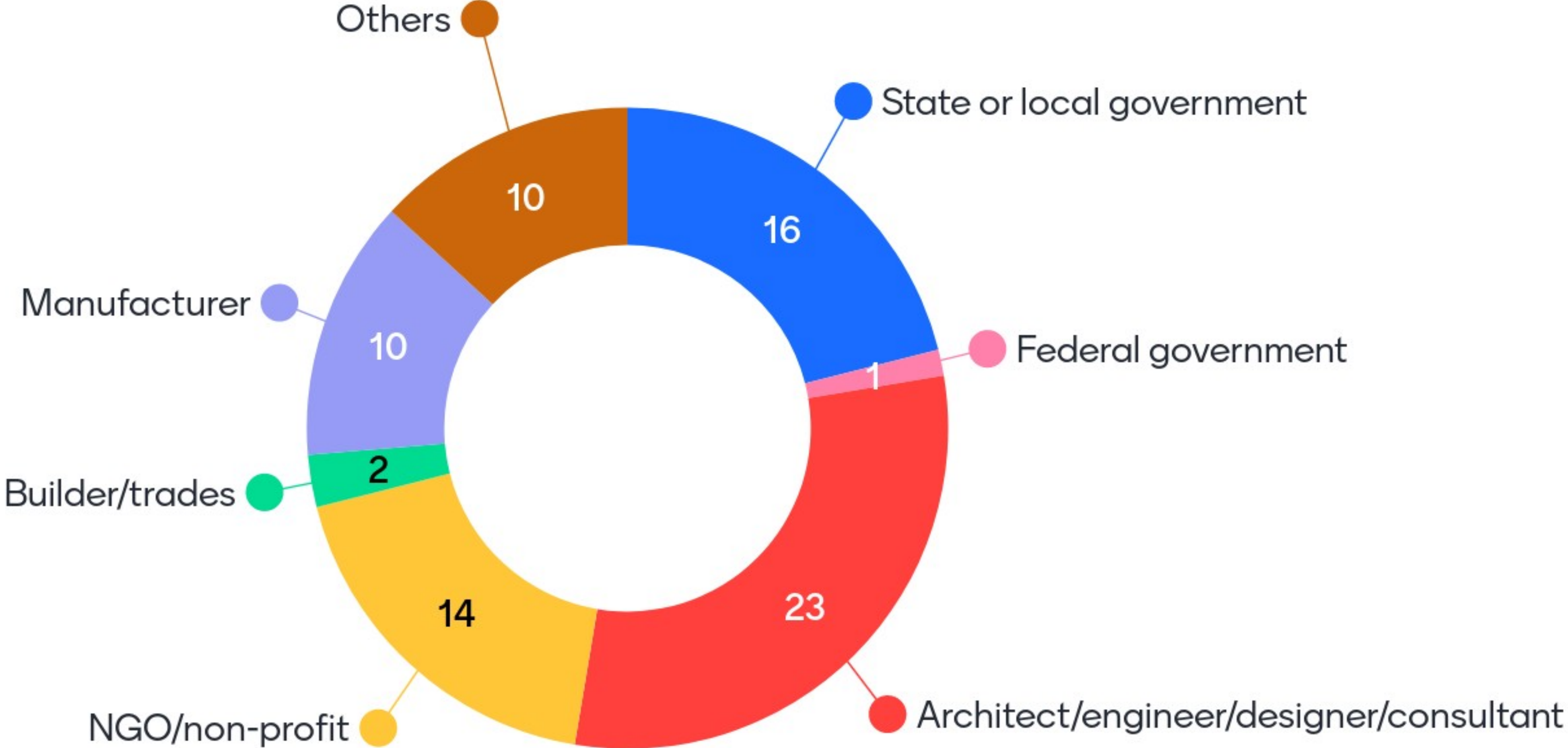
# Building Performance Standards Breakout Session: Compliance and Implementation

National Energy Codes Conference  
July 22, 2021





# What most closely aligns with your organization?



# Meet Our Panelists



**Gina Bocra**  
Chief Sustainability Officer  
NYC Department of Buildings



**Amy Boyce**  
Associate Director  
Institute for Market Transformation



**Kim Cheslak**  
Director of Codes  
New Building Institute



**Adam Hinge**  
Managing Director  
Sustainable Energy Partnerships



**Emily Salzberg**  
Building Unit Managing Director  
WA Department of Commerce



**Bing Liu**  
Building Sector Manager  
Pacific Northwest National Laboratory

# What are the most significant challenges regarding BPS compliance and implementation?

Enforcement

Managing large amounts of bill data

Cost of compliance versus penalties of non-compliance.

Education

Enforcement.

special building

Cost of HVAC upgrades

bench marking data

Enforcement

# What are the most significant challenges regarding BPS compliance and implementation?

Cost

Complexity

Monitoring accurate data.

Apathy

Politics

Staffing, enforcement. Figuring out and enforcing fine structures - most places never actually fined anyone for benchmarking non-compliance so it will be a culture shift.  
EM

Data quality

Workforce

costs and funding

# What are the most significant challenges regarding BPS compliance and implementation?

How much truth is in the fear that the Gov't is pumping out?

Historic preservation

Financial profitability

Proper installation and testing of components by trained, skilled, and certified workers and technicians.

Helping others understand what is is, why it is important, what it entails and avoiding conflicts with building codes, standards, beliefs, practices.

Assistance for building owners in assessing compliance and options to fix

Heirarchy of importance vs other frameworks

Bandwidth to report the data

Simply informing building owners about the program/law

# What are the most significant challenges regarding BPS compliance and implementation?

Under-resourced buildings ability to comply / providing funds to help

Commissioning and recommissioning.

transparency

Initial costs

Enforcement, education

Technologies that have been proven to meet the requirements

education

Understanding what BPS consists of and how to achieve it

awareness channel

# What are the most significant challenges regarding BPS compliance and implementation?

Enforcement and public trust

workforce

Software tool to assist code officials

financing to help bridge longer ROIs.

Funding to help building owners comply. Setting targets.

# What resources would be helpful?

Enforcement

data collection

incentives for workforce development

Case studies

data warehouse

Education, compliance assistance, financial incentives

cost incentives

Training

Standardized policies and enforcement strategies



# What resources would be helpful?

Technology tools

funding

Assistance to cities and CBOs with interest in policies

Standard ESCO public private program?

worker standards in the codes, i.e. training and certifications

Technical support

Grants

propose most cost effective solutions.

Software tool to help code officials

# What resources would be helpful?

Financial support

Funding for retrofits

funding for implementation and administration

Case studies and model language

Accurate payback information on design changes

Generous grants / low-interest loans for retrofits

Import costs from utilities/energy providers to reduce manual labor.

Aggregate data disclosure to the public

Money and staff to implement

# What resources would be helpful?

Teaming with local/region organizations to support on-the-ground needs

work force development

Incentives to builders and developers

training and a backstop for minimum requirements

Funding and staffing. Education too.

Truth meter on all the information that is coming out. How much is a twist or slant on partial truth. All the code and laws can't get morality into our country.

Implement a lean approach, take time and waste out of processes and regulations and focus existing resources on what's most important.

Ongoing training for trades

Standardized framework for building performance standard that can be locally adopted.

# What resources would be helpful?

Workforce education

Thanks

# Where can DOE help?

