



# The Clean Buildings Standard Forum

WASHINGTON STATE

H A R G I S

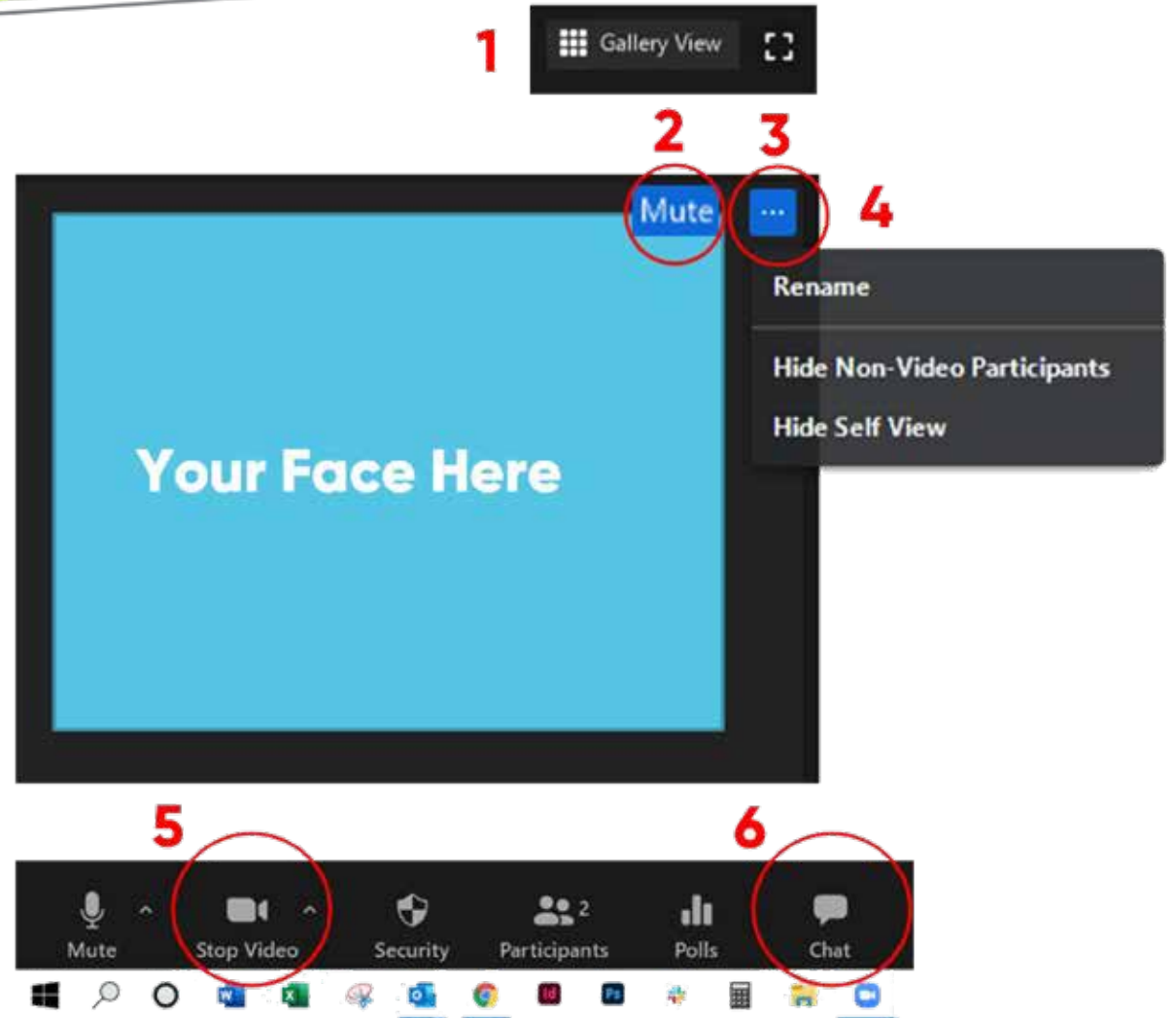


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NEEC  
NORTHWEST ENERGY  
EFFICIENCY COUNCIL

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2. MUTE until ready to ask question or comment.
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# Agenda

## WASHINGTON STATE

Opening Remarks

Electrification

*Topics to Consider*

CBS Overview

*Timeframes*

*Compliance Pathways*

*Benchmarking and Energy Targets*

*Energy Management Plan*

*O&M Plan*

*Early Adopter Incentive Funds*

Breakout Room Discussion

Panel Discussion

*Please complete the  
survey forthcoming  
for AIA CEU credits  
and presentation  
materials.*



## PRESENTERS

H A R G I S



**Michael Baranick**  
PE, CEM®, CMVP®, LEED®  
Senior Associate, Energy Services



**Mark Humiston**  
PE, CEM®, GBE®  
Associate Principal, Electrical



**Michael Bergstrom**  
MBA, CEM  
Business Development,  
Energy Services



**Martin Clinton**  
M.S., CEM, CEA  
Building Performance  
Service Manager

## MODERATOR



**Kerry Meade**  
Executive Director  
NEEC

## SPECIAL GUEST



**Alex Ramel**  
Washington State Representative  
40th District

## PANELISTS



**Amy Wheelless**

Policy at NW Energy Coalition  
and Shift Zero



**Poppy Storm**

Founder & Director of Innovation



**Ron Major**

Resource Conservation Program  
Manager Facility Professional  
Services, Energy Program  
Washington State Department of Enterprise Services



# Opening Remarks



# Electrification

# Topics to Consider

- Clean Energy Transformation Act (CETA) – SB 5116 (Electric utilities to use 100% renewable energy generation by 2045)
- City of Seattle – Executive Order 2021-09
  - Carbon-based Building Performance Standards (>20,000 sf by 2022)
  - Fossil Fuel Ban for City-owned Buildings by 2035
- EV Charging – 10% of parking stalls (new construction)
- Certifications – ILFI Zero Carbon, 2030 Challenge
- Fossil Fuel Ban
  - 2018 SEC
  - 2021 WSEC (proposed amendments)



# Case Study: L&I

## ELECTRIFICATION AND ENERGY INFRASTRUCTURE RENEWAL

459,000 square foot office building constructed in early 90's

L&I had aspirational goals to renew facility based on current standards & technologies

Developed a phased approach to meet target goals

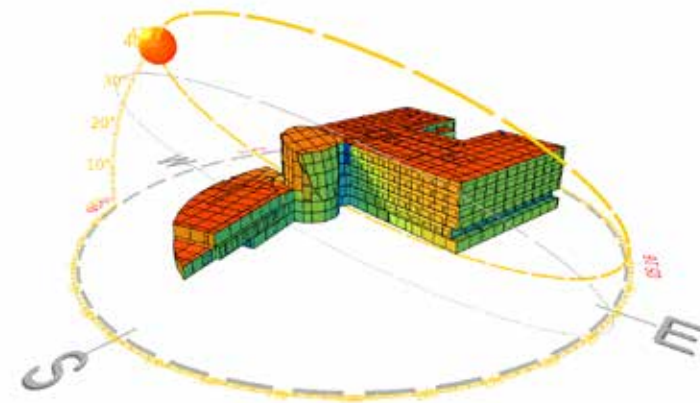
EUI will be reduced to 35 kbtu/yr

Electrified: carbon emissions reduced from 72MTCO<sub>2</sub> to zero

Energy savings measures: Heat pumps, lighting, controls, new HVAC with upgraded ventilation, geo-exchange, new CHW system

Will meet Clean Buildings Standard and future legislation

Net zero potential with solar PV, solar thermal, and storage



# Clean Buildings Standard

WHY / WHAT IT MEANS / HOW TO PREPARE



# Clean Buildings Standard

HB 1257, 2019



Why now?



What it means



How to prepare  
Case Study



# Overview

WHO / WHAT / WHEN / HOW OFTEN

Reduce energy consumption through improved energy efficiency and performance in existing buildings, ultimately leading to a reduction in Greenhouse Gas Emissions (GHG) within the building sector.



**Existing commercial building >50,000 sf**  
(multi-family not required)



**Meet energy performance targets or financial investments criteria**



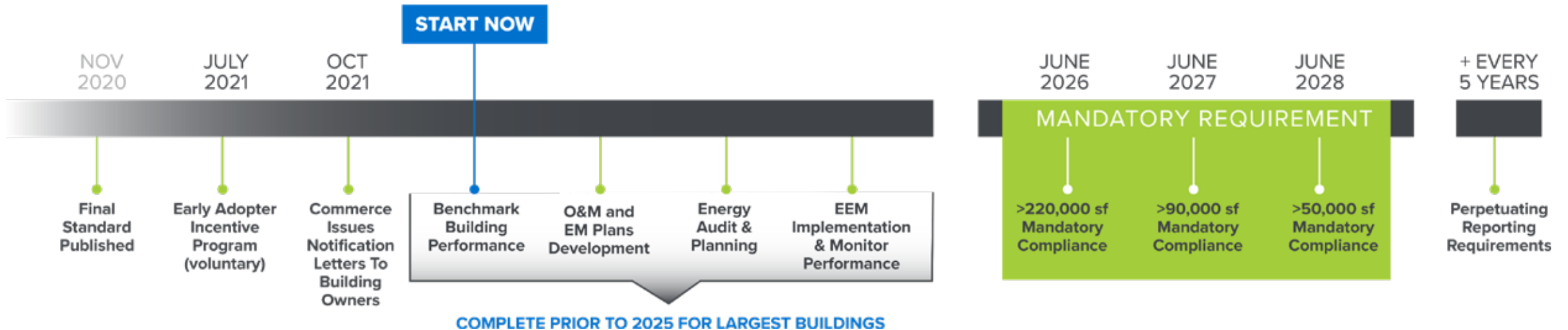
**Starting in January 2026**



**Required to comply every 5 years**

# Timeline

WHO / WHAT / WHEN / HOW OFTEN



# Level of Effort to Comply

## Scoping & Implementing



## Fiscal Planning

(outside CFP/ LRFP efforts)

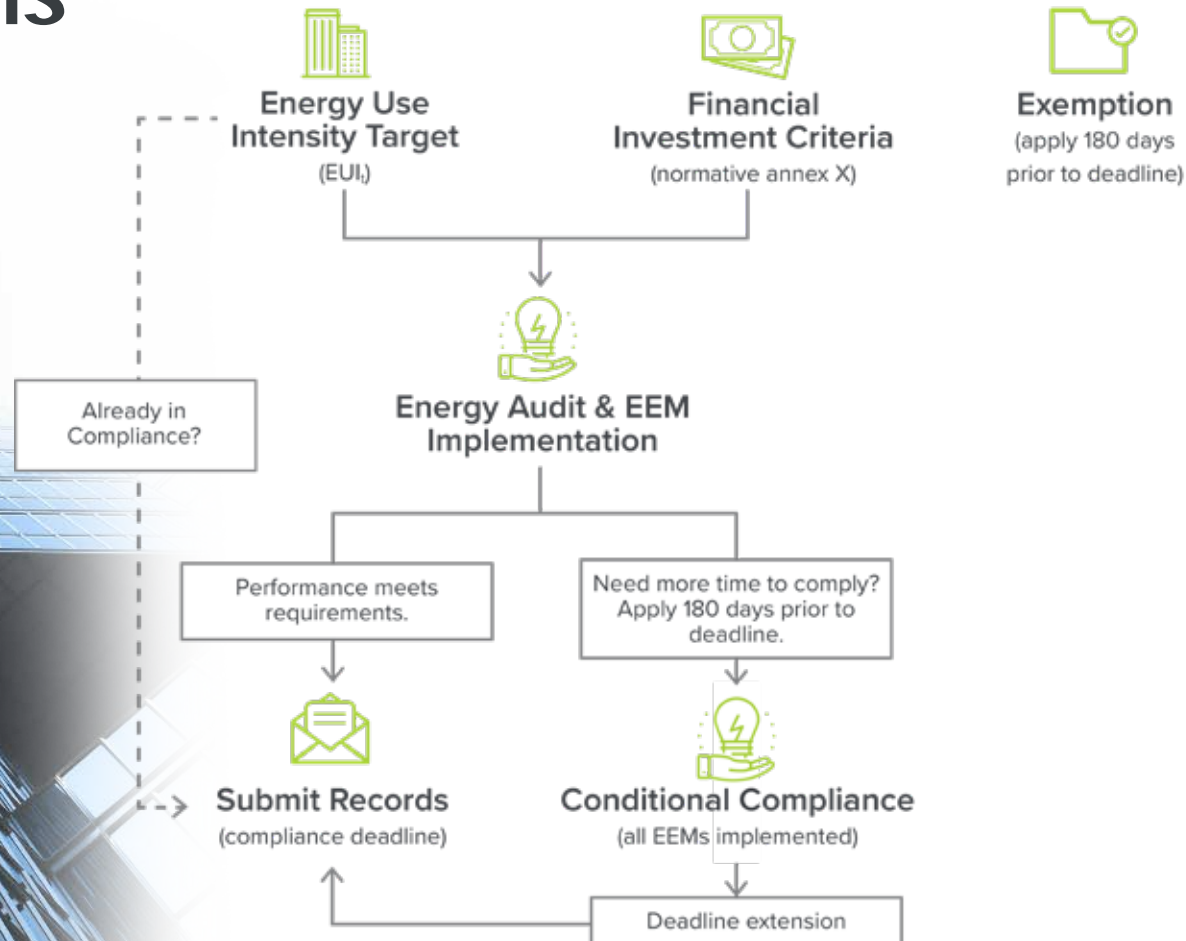
Budget time

Approval

Funding cycle



# Compliance Paths



  
**Exemption**  
(apply 180 days  
prior to deadline)

  
**Non-compliance**  
(penalties apply)

# Compliance Option

## EXEMPTION CATEGORIES

- 1** | No Certificate of Occupancy
- 2** | <50% Occupancy
- 3** | <50,000 sf
- 4** | >50% area is Manufacturing / Industrial
- 5** | Agricultural Structure
- 6** | Vacant Due to Renovation or Pending Demolition
- 7** | Building Meets Financial Hardship
- 8** | Multifamily
- 9** | Tribal
- 10** | Federal
- 11** | Recommissioning of Recently Built Buildings



# Compliance Options

## ENERGY USE INTENSITY TARGET

**Weather-normalized EUI  $\leq$  Energy Use Intensity Target (EUI<sub>t</sub>)**

- Only available to building types with EUI<sub>t</sub>
- EUI period must be within 2 years of compliance date
- EUI targets developed for each building type. Targets adjusted based on:
  - Average weekly hours of operation
  - Area-weighted if building consists of multiple activity types
- EUI target will likely continue to reduce in the years to come and /or switch to a different metric (e.g. GHG emissions)





# Compliance Options

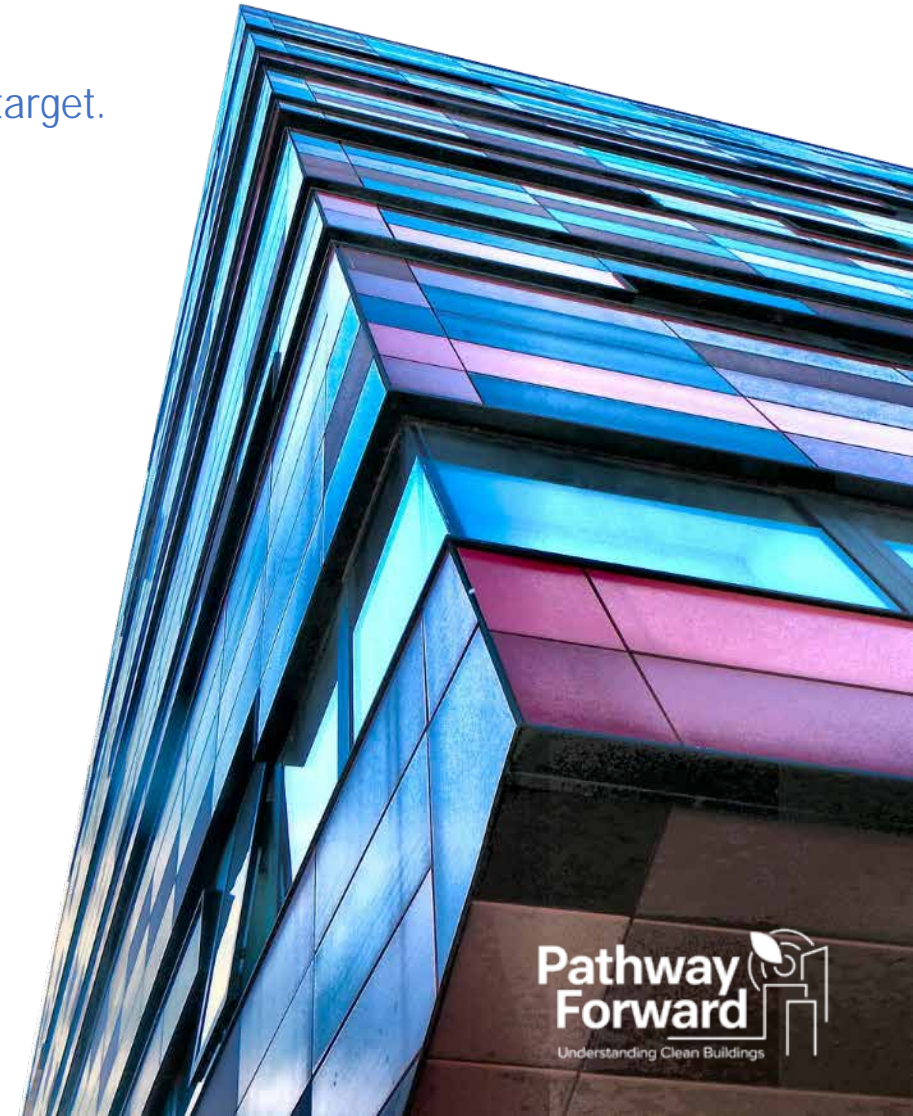
ENERGY USE INTENSITY TARGET

$$\text{Weather-Normalized EUI} = \frac{\text{Normalized Energy Consumption}}{\text{Gross Floor Area}}$$
$$\text{EUI}_t = \frac{\text{EUI}_t \times \text{Operating Shift}_1 \times \text{Area of Building Activity}_1 + \dots}{\text{Gross Floor Area}}$$

# Energy Use Intensity Target (EUI<sub>t</sub>)

Buildings built after July 1<sup>st</sup> 2016 must comply with EUI<sub>t</sub> that is 15% below listed target.

	Cascades West Climate <b>Zone 4C</b>	Cascades East Climate <b>Zone 5B</b>
Office	63	66
Retail	68	75
Warehouse	36	44
Library	56	59
Hospital	215	215
Grocery Store	191	198
Hotel	68	72
Prison	101	106
Church	67	70



# Compliance Option

## INVESTMENT CRITERIA

Utilized for buildings with no  $EUI_t$  or as an alternative compliance approach.

OPTION A

Implement all energy efficiency measures (EEM) with simple payback < useful life

OPTION B

Implement optimized bundle of EEMs with savings-to-investment ratio > 1

optimized bundle = collection of EEMs that maximizes energy savings



# Energy Audit



## Energy Audits Requirements

**BUILDINGS WITH EUI<sub>i</sub>:**  
only if weather-normalized  
 $EUI > EUI_i$

**BUILDINGS WITHOUT EUI<sub>i</sub>:**  
audit must be completed



## ASHRAE Std. 211-2018 Energy Audits Required

**LEVEL 1:**  
WALK-THROUGH ANALYSIS

**LEVEL 2:**  
ENERGY SURVEY/  
ENGINEERING ANALYSIS



## Report Format

**COMPLETED  
ELECTRONICALLY USING  
DEPARTMENT OF  
ENERGY'S ENERGY ASSET  
SCORE TOOL**

[www.energy.gov/eere/  
buildings/building-energy-  
asset-score](http://www.energy.gov/eere/buildings/building-energy-asset-score)



## Reusable Energy Audits

completed within 3 years  
of compliance date

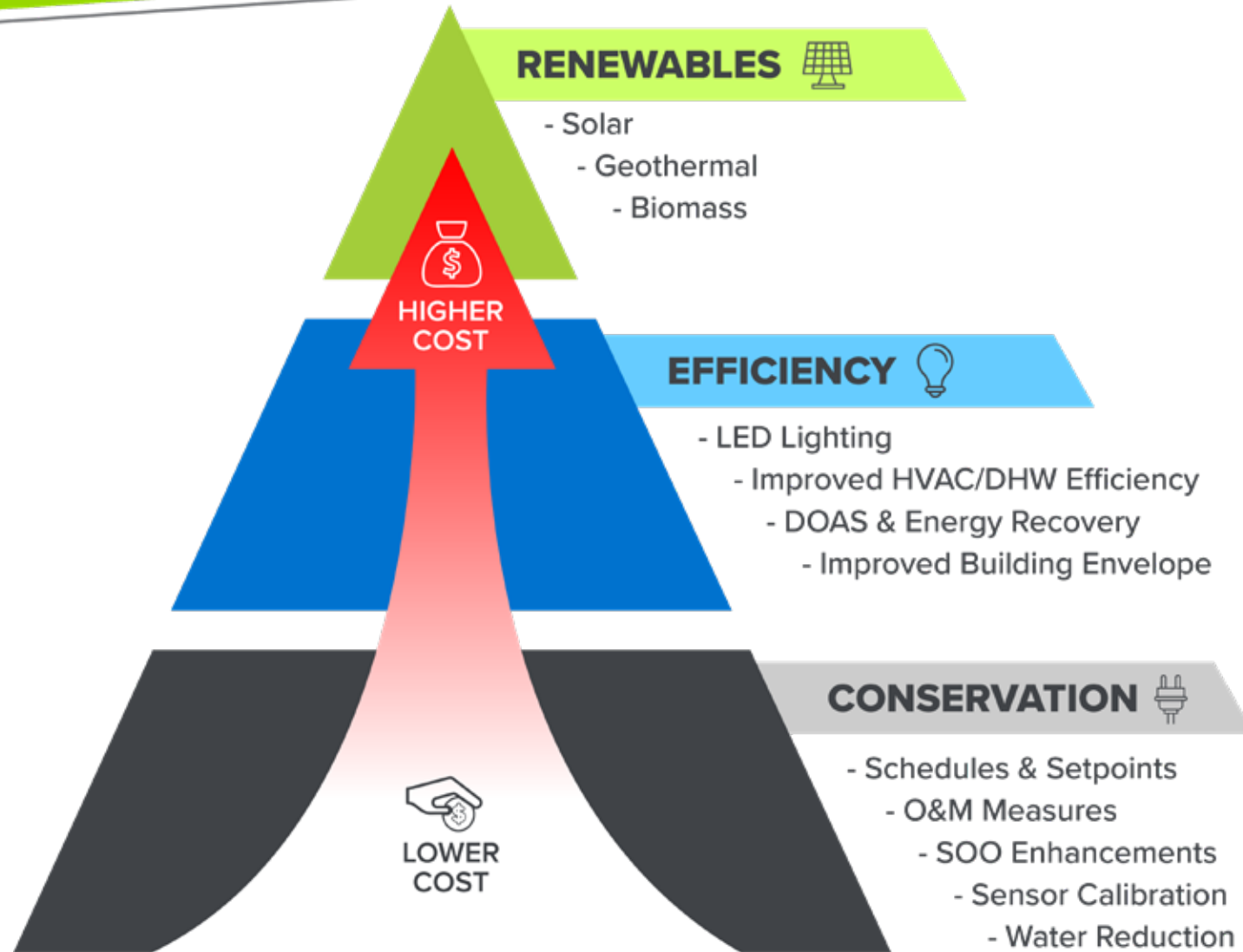
**AND**

the scope of the audit meets  
the requirements of section 8

**OR**

there have been minimal  
changes to the building  
systems since the completion  
of the audit

# EXAMPLES OF ENERGY EFFICIENCY MEASURES (EEM)





# Non-Compliance

## MITIGATION PLAN



Reduce possible  
penalties



Demonstrate  
action to achieve  
compliance



Time sensitive  
Notice of Violation  
& Intent (NOVI)  
30 days to submit

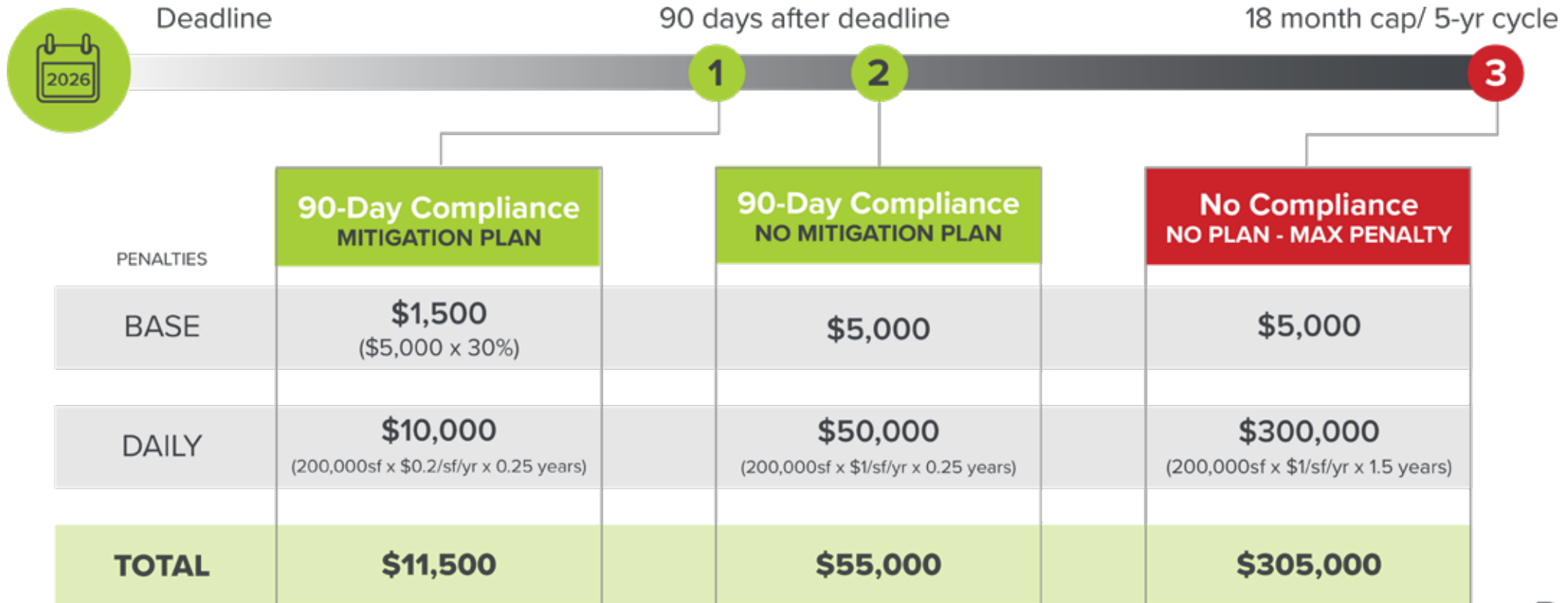


Daily penalty  
5x higher without  
plan; 30x higher  
if ignored



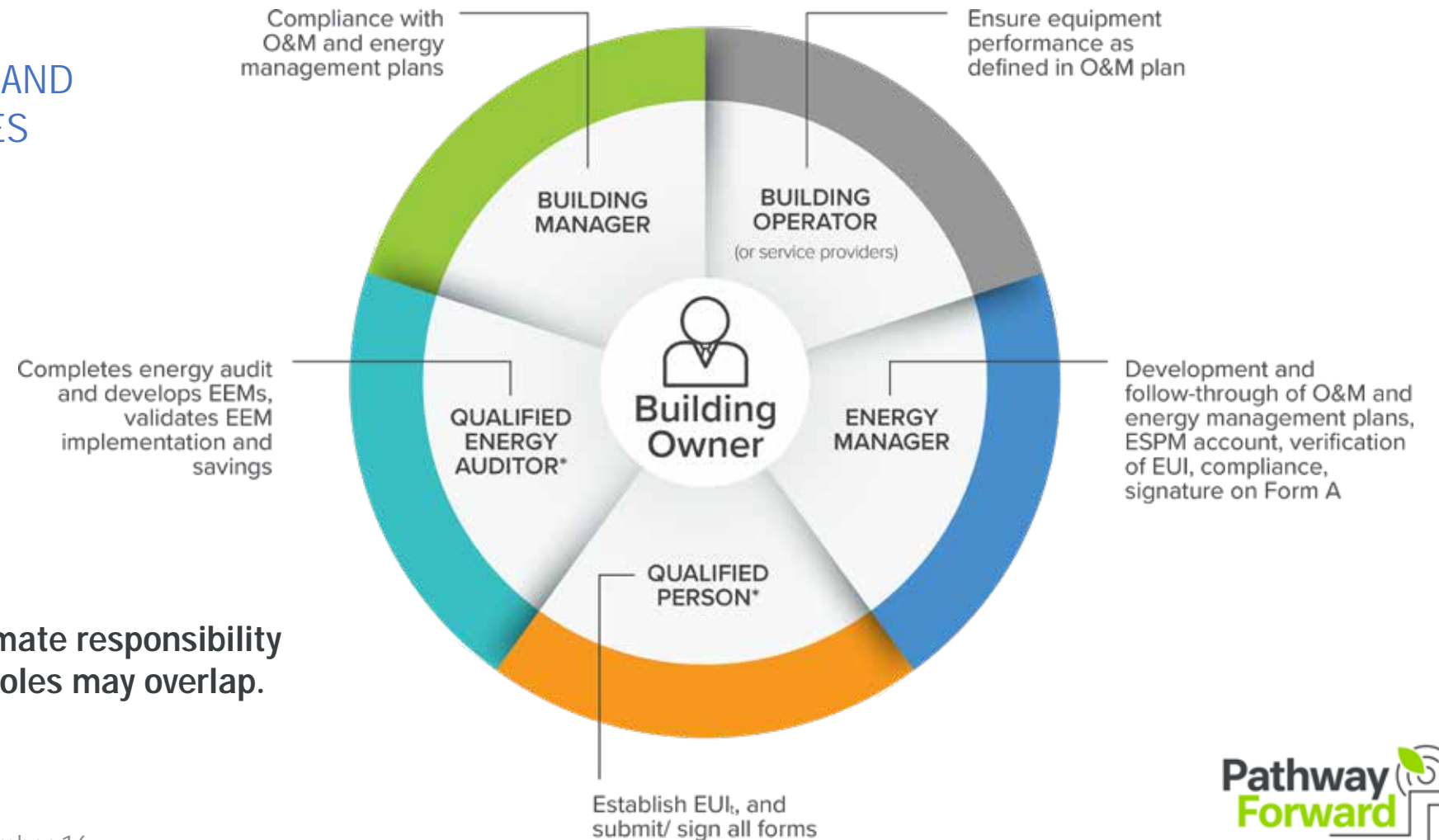
# Financial Penalties

EXAMPLE / 200,000 SF BUILDING



# The Players











## BUILDING PERSONNEL AND THEIR RESPONSIBILITIES



**Building owner holds ultimate responsibility to comply with standard roles may overlap.**

\*minimum credentials apply

# Energy Management Plans

Task	Level of Effort
Develop & Implement an O&M Plan	
Capital Management Plan <sup>1</sup>	
Training Plan for O&M Personnel <sup>1</sup>	
Inform Occupants on Energy Efficiency <sup>1</sup>	
Annual Updates to Commerce	
Maintain List of Energy Audits, List of EEM's and Required Documentation for Each	
Contact Lists	
Lighting Schedule & Power Density	
Lighting Satisfaction Survey	
Provide Copy of EMP to Occupants & Stakeholders Annually	

<sup>1</sup> Building Size, Equipment Density /Complexity, and Current Practices can Greatly Vary Resources Needed to Complete!



# OPERATIONS & MAINTENANCE PLAN

Any Building Equipment/System that Directly or Indirectly Consumes Energy



Envelope



Domestic  
Hot Water



HVAC



Refrigeration



Lighting



Controls



Electrical  
Distribution



On-Site Power  
Generation

# Properly Maintain Equipment & Systems



**Air Actually Moving**



**Proper Outside Air**



**Clean Coils**



# Operations & Maintenance Plan Highlights

- Ensure Energy Efficiency of Building Systems Throughout Their Service Life
- Commits Building Operators & Maintenance Personnel to Basic Goals of Performance
  - Including Establishing Objectives & Criteria for Evaluation
- Access to Equipment, Re-evaluate when building use changes
- Replace Equipment & Lighting with most stringent requirements from Federal/State Standards and applicable Building Code
- Maintenance **shall** be IAW manufactures requirements **and** tasks to minimize failures and maintain energy efficiency.



# Example of Maintaining Energy Efficiency

Airflow Sensors



# Reporting Forms

## REQUIRED Regardless of Path



### FORM A

- Basic Building Information
- Qualified Person, Energy Manager Information
- Summary Energy Data
- Energy Management Plans Verified
- O&M Plans Verified
- Energy Audit Information Uploaded
- Signatures



### FORM B

- Building Identification
- GFA Recorded
- Target EUI Calculation



### FORM C

- Portfolio Manager Documentation
- Run Portfolio Manager Report



### FORM D

- Energy Audit Form (via DOE's Website)



### FORM F

- Investment Criteria Tool



### FORM G

- Historic Building Documentation



### FORM H

- Application for Exemption Form

# Early Adopter Incentive Program Eligibility

BUILDING TYPES / PERFORMANCE



**Commercial Buildings**  
Subject to clean buildings standard



**Multifamily**



**Performance**  
Current weather-normalized  $EUI_t > EUI_{t+15}$



# ma Early Adopter Incentive Program

PERFORMANCE BASED



Available Starting July 1, 2021



One Time Payment \$0.85/sf



**\$75 Million Allocated**  
First come, first serve



Normal Utility Incentives Available



Multifamily Buildings are Eligible



**Incentives are Performance-based**  
(i.e. paid after  $EUI_t$  is verified via M&V period)

# CBS Take-Aways



**Act with Urgency to Avoid  
“The Crunch”**



**Benchmark Buildings NOW**



**Follow a Compliance  
Pathway to Avoid Fines**



**Solve Internally or  
Outsource Solutions**



# Additional Resources

## **COMMERCE:**

[www.Clean Buildings - Washington State  
Department of Commerce](http://www.CleanBuildings-WashingtonState.com)

## **NEEC:**

[www.NEEC.net](http://www.NEEC.net)

## **ESPM:**

[www.EnergyStar.gov/buildings/benchmark](http://www.EnergyStar.gov/buildings/benchmark)

## **NREL:**

[www.nrel.gov/docs/fy21osti/79094.pdf](http://www.nrel.gov/docs/fy21osti/79094.pdf)





# Breakout Sessions

# Panel Discussion



**Amy Wheelless**  
Policy at NW Energy Coalition  
and Shift Zero



**Poppy Storm**  
Founder & Director of Innovation



**Ron Major**  
Resource Conservation Program  
Manager Facility Professional  
Services, Energy Program  
Washington State Department of Enterprise Services



# Thank You





# Pathway Forward

Understanding Clean Buildings



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