

# Washington State Energy Strategy Technical Consulting



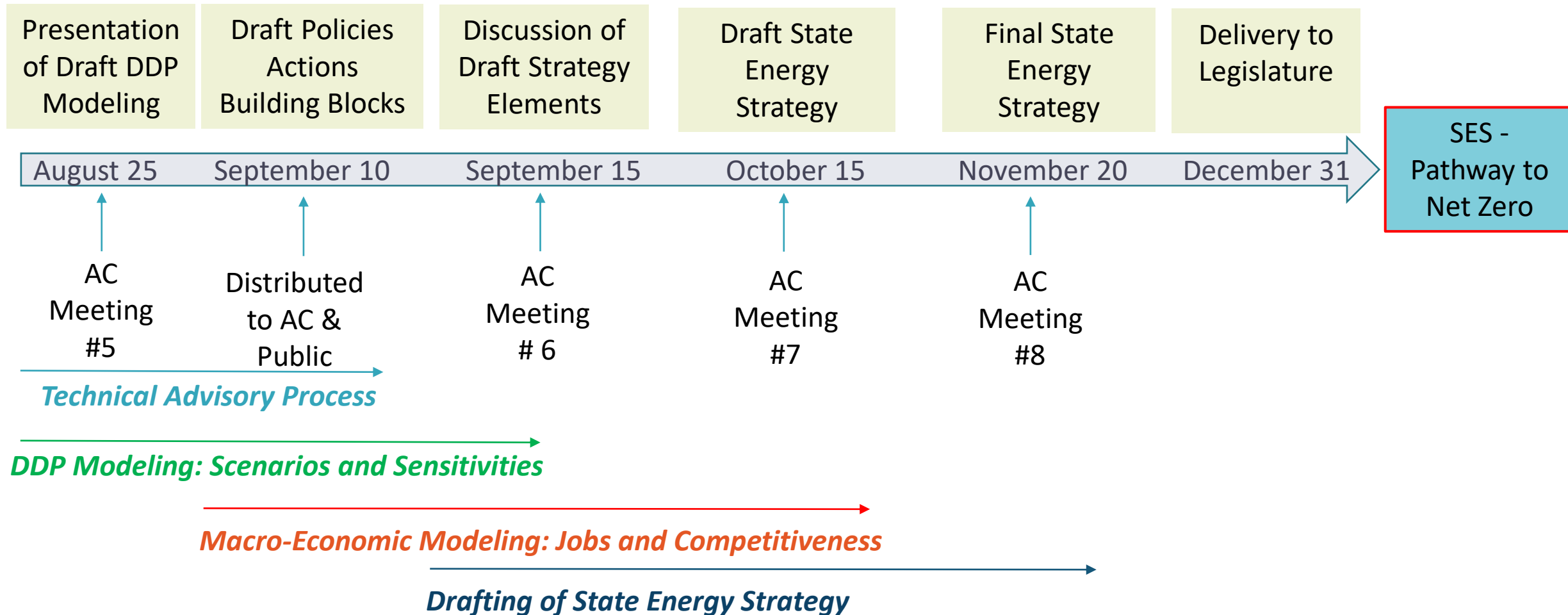


# September 15, 2020 Advisory Committee Meeting

- Technical Advisory Process Status
  - Eileen V. Quigley, Clean Energy Transition Institute
- Technical Advisory Process Context
  - Michael Lazarus, Stockholm Environment Institute
- Transportation Sector
  - Derik Broekhoff, Stockholm Environment Institute
- Buildings Sector
  - Poppy Storm, 2050 Institute
- Industry Sector
  - Roel Hammerschlag, Hammerschlag, LLC
- Electricity Sector
  - Marc Daudon, Clean Energy Transition Institute



# 2021 State Energy Strategy Process



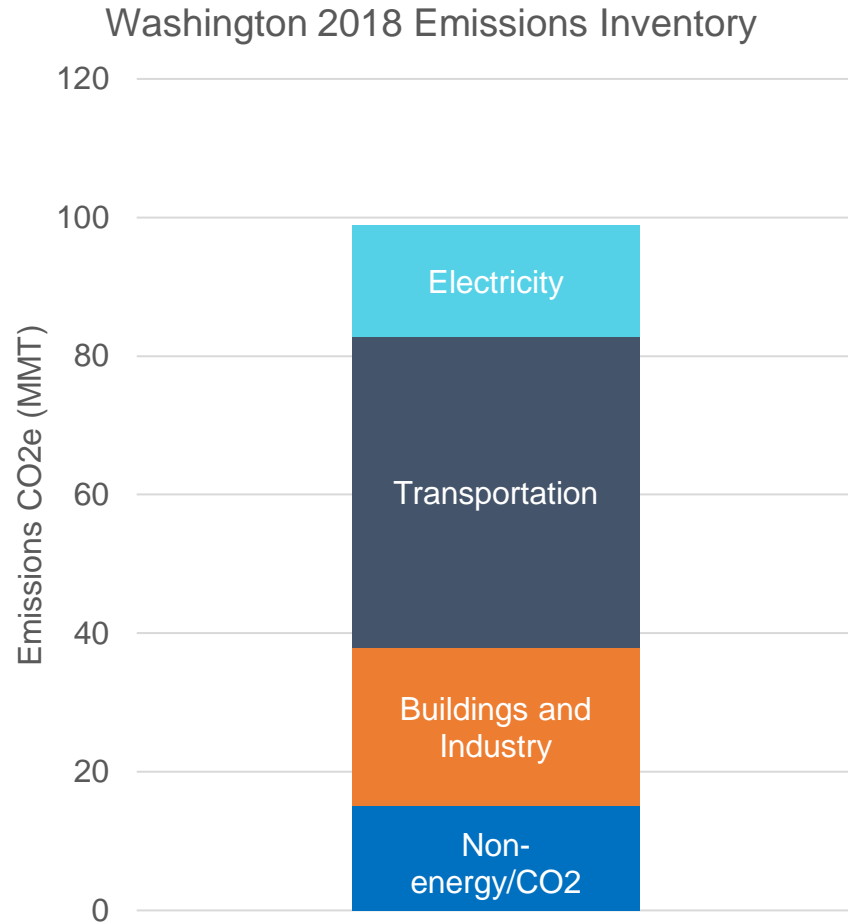
# Where We Are in the Technical Advisory Process

- Presenting draft strategy elements as a step toward drafting the strategy itself
- Ties the outcomes from the deep decarbonization pathways modeling to policy
- Reflects inputs from Advisory Committee members; wide range of experts and resources consulted; best practices from other state energy plans

# Technical Advisory Process Context for Today's Session

- Grounding in the emissions profile for the state
- Achieving the 2030 target
- Four sector technical processes: Transportation, Buildings, Industry, Electricity
- Presenting emerging policies and actions that would meet the ambitious GHG reduction targets the state has set

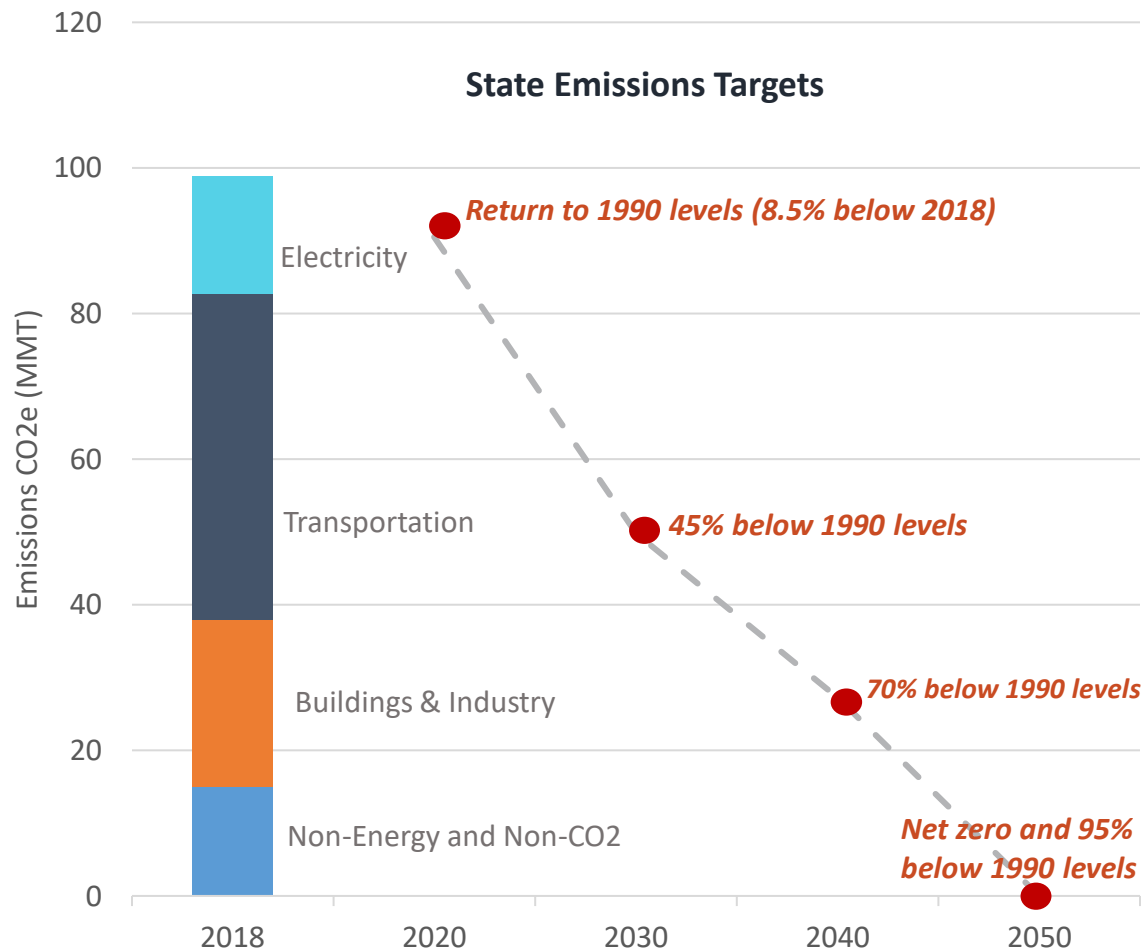
# Context: Washington's Emissions Profile



- Washington's 2018 GHG emissions were **98.9 million metric tons**, up from 90.5 MMT in 1990
- Energy related CO<sub>2</sub> emissions represent ~85% of all emissions
  - Transportation (45%)
  - Buildings and Industry (23%)
  - Electricity (16%)
- Non-energy and non-CO<sub>2</sub> emissions ~15%

# The Challenge: Meeting State Emissions Targets

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## ➤ Economy-wide

- 95% reduction in gross emissions by 2050
- Net zero by 2050: land-based sequestration can provide remaining 5%

## ➤ Energy

- Energy-related emissions will likely need to decline at same pace or faster
- Some non-energy/non-CO<sub>2</sub> sources may be more difficult to mitigate

## ➤ Challenge

- Halving emissions in next 10 years

# Meeting the Challenge Requires a State Strategy that is

- Transformational – *Incremental change is insufficient*
- Comprehensive – *Across sectors and actors, from research to policy to investment and community engagement*
- Inclusive and Equitable – *All communities benefit, especially historically disadvantaged*
- Dynamic – *Stimulates high-road jobs and new economic opportunities*
- Multi-Level – *Integrates with local, national, and global action*



# Washington State Energy Strategy

## Emerging Themes & Strategies for the Transportation Sector

# Transportation Sector Technical Advisory Process

## Outreach

- 21 interviews (5 with AC members)
- 1 inter-agency discussion
- 1 working session with Department of Commerce and Governor's Office

## Research

- >50 reports, articles, presentations, state energy plans, and legislative documents

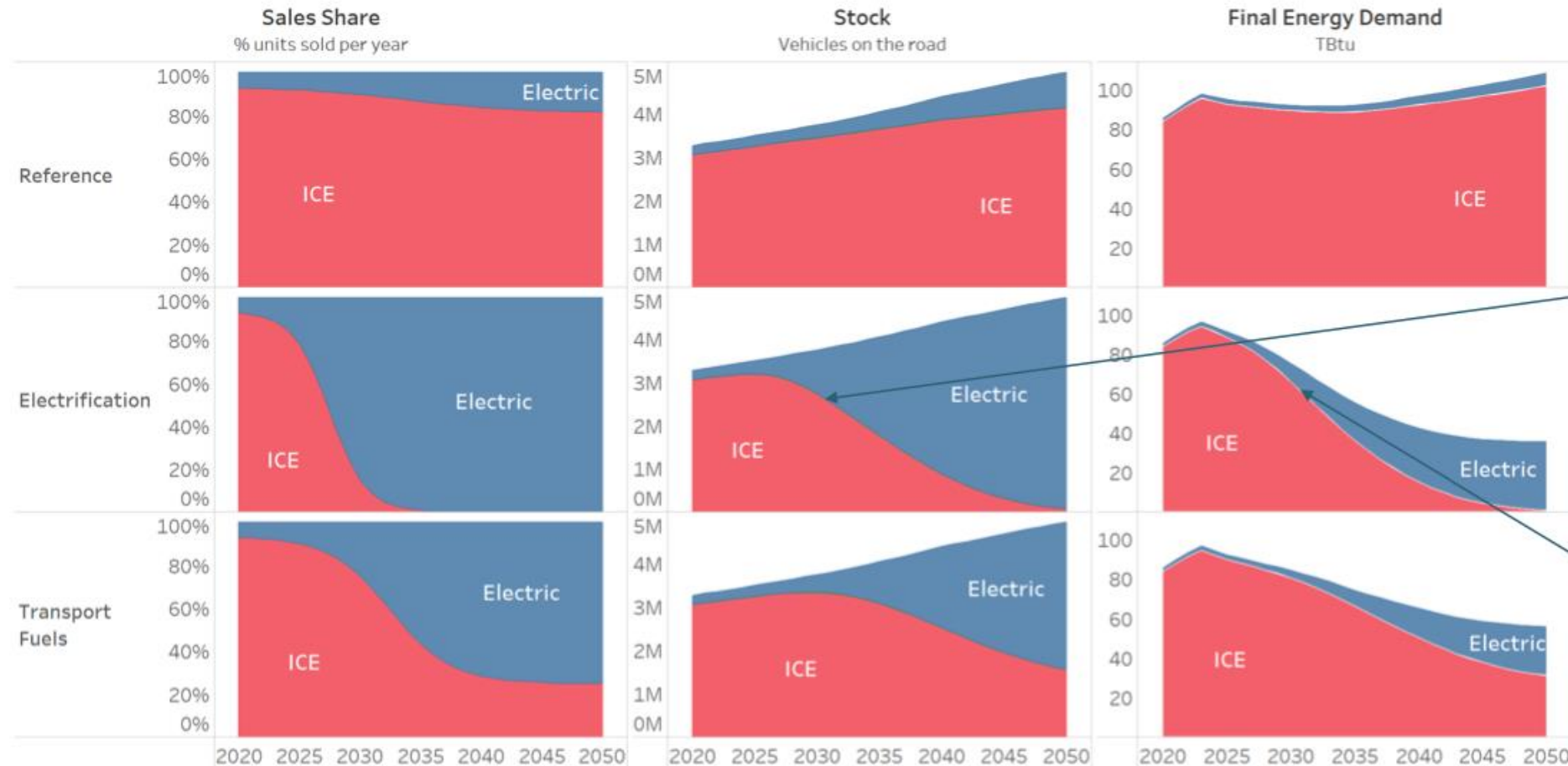
# Lay of the Land

- Largest sector in terms of GHG emissions (45%)
- Multiple segments/modes, with different needs and challenges
  - On-road passenger
  - On-road freight
  - Maritime
  - Rail
  - Aviation
- Approximately 50% of transport emissions from light duty vehicles – emissions expected to decline under “business as usual”
- Around 20% of emissions from commercial and freight trucks, with *growing* emissions due to projected increase in travel demand, according to Department of Energy projections

# Across scenarios, light-duty BEVs are key to reducing energy demand and emissions

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Projected Sales, Stock, and Final Energy Demand



73% of vehicles are ICE in 2030 in the Electrification Case

Electrification Case final energy demand for fuels remains high in 2030: 74% of Reference in 2030

# Heavy-duty vehicles will see a mix of electrification and switching to hydrogen and clean liquid fuels

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Projected Sales, Stock, and Final Energy Demand





# Transitioning the Transport Sector

## Key Themes

- Transportation systems are interconnected, and the clean energy transition will require a systemic approach
- Technology change – shifting to zero emission vehicles (ZEVs) – is a key part of the solution
- But fully realizing health, safety, equity, and economic development benefits also requires connecting people and goods more efficiently:
  - Improving accessibility (reducing need for travel, including through remote work options)
  - Shifting to more efficient and less polluting modes
- Highest benefits will come from an “all of the above” approach, including behavior change

# Transportation Sector Emerging Strategy

- Improve efficiency and decarbonize transportation over which the State has direct influence
  - On-road transport
  - State fleet vehicles
  - In-state marine, aviation, and rail
- Complement efforts to improve efficiency and decarbonize international and interstate transportation
  - International aviation and shipping
  - Interstate rail
  - Fuel economy of on-road vehicles

# Four Levers of Transition

Move people and goods more efficiently and equitably

Decarbonize




















Reduce the need for travel

Shift to cleaner modes

Improve fuel economy

Electrify and switch to zero-carbon fuels

# Moving People and Goods More Efficiently

Approaches	Reduces need for travel	Shifts to cleaner modes
Improve land use planning and urban design (more compact, greater accessibility)	 	
Manage travel demand ("TDM" measures)	 	
Promote transit-oriented development		
Keep people close to work, services, shopping, and other amenities	 	
Enhance access to telework and other remote service options		
Increase quality and quantity of mass transit (urban)		
Improve walking and cycling options		
Develop high-speed rail service (inter-urban)		 
Transport more goods by rail and/or ship, as appropriate		 
Improve freight logistics and intermodal connections		

# Moving People and Goods More Efficiently

## Potential Policies and Actions

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### Goal Setting

- Set specific statewide numerical targets for transit, active transport, broadband

### Transportation Funding

- Increase, diversify, and stabilize funding
- Establish metrics for GHG (and co-benefit) impacts of dollars spent
- Support coordination needed to fill gaps, realize synergies in transport networks

### Transportation Planning and Implementation

- Require coordination (inter-agency and inter-modal) as a condition for state transport funding
- Enhance technical resources & services for local planners / decision-makers

### Telework & remote service provision

- Pursue universal broadband access at affordable cost
- Update commute-trip reduction policies
- Provide telework / remote service incentives

### Fuel economy






















- Continue CA vehicle emission standards
- Explore car buyback programs

### Equity

- Adopt statewide means-tested transit subsidies
- Tie funding to equity goals
- Develop model rules & resources for community engagement
- Fund equity advisory groups



# Electrify and Switch to Zero-Carbon Fuels

Approaches		Supports Electrification	Supports Use of Low/Zero-Carbon Fuels
	Ensure equitable, affordable access to passenger ZEVs and electricity/fuels		
L C F S	Enhance demand for ZEVs	 	 
	Develop charging infrastructure (all modes)	   	
	Support development of electricity supply to serve EV load	  	
	Develop low/zero-carbon fueling infrastructure (all modes)		   
	Support development and production of low/zero-carbon fuels		   

# Electrify and Switch to Zero-Carbon Fuels

## Potential Policies and Actions

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### Goal Setting

- Set specific statewide numerical targets for ZEVs and EVSE
- Track progress toward goals and resulting benefits (improved local air quality, GHG reductions)

### Lowering ZEV Costs & Expanding Benefits

- Support additional incentives for passenger & freight ZEVs (incl. utility-sponsored rebates)
- Target public & private fleet electrification
- Subsidize workplace charging / fueling infrastructure

### ZEV Outreach and Education

- Support consumer & business education and outreach
- Establish dealership education programs
- Establish car sharing programs for state/local ZEV fleets

### Charging and Fueling Infrastructure

- Establish a permanent State-level coordinating body for ZEV infrastructure
- Integrate planning across modes & fuels
- Promote ZEV-friendly building & land-use codes
- Provide state support for major (multi-modal) charging/fueling infrastructure projects

### Electricity and Fuel Supply

- Require utilities to incorporate ZEV demand in IRP and distribution planning processes
- Support development of in-state biofuel, hydrogen, and electro-fuel production capacity, including related workforce development

### Equity

- Scale ZEV rebates for low-income car buyers
- Establish means-tested charging rate subsidy programs for low-income drivers
- Prioritize EVSE investment in communities most impacted by air pollution
- Involve communities in infrastructure planning

# Washington State Energy Strategy

## Emerging Strategies and Tactics for the Building Sector

# Buildings Sector Technical Advisory Process

## Outreach

- 20 interviews (3 with AC members)
- 1 inter-agency discussion
- 1 working session with Department of Commerce and Governor's Office

## Research

- >50 reports, articles, presentations, state energy plans, and legislative documents

# Lay of the Land

- More than 20% of state GHG emissions
- Multiple segments with different opportunities and challenges
  - Residential
  - Commercial
  - Multifamily
  - New/existing
  - Rural/urban
  - Income variations
- Advanced energy codes and standards
- Robust regional framework for delivering efficiency as a resource



# Discoveries from DDP Modeling

## Buildings Can Be a Resource for Reducing Energy and Costs

- Energy efficiency and electrification in buildings lowers final energy demand
- Lower pipeline gas use in buildings reduces costs for expensive bio/synthetic fuels which can be used in other sectors
- Achieving 2030 targets requires rapid technology shift:
  - Sales of high efficiency tech: 50% in 2025, 100% in 2030
  - Fully electrified appliance sales in most sub-sectors by 2050
- Policies are needed to quickly align all stock rollover decisions with GHG reduction requirements

# Residential Space Heating Electrification Saves 15-30 TBtu



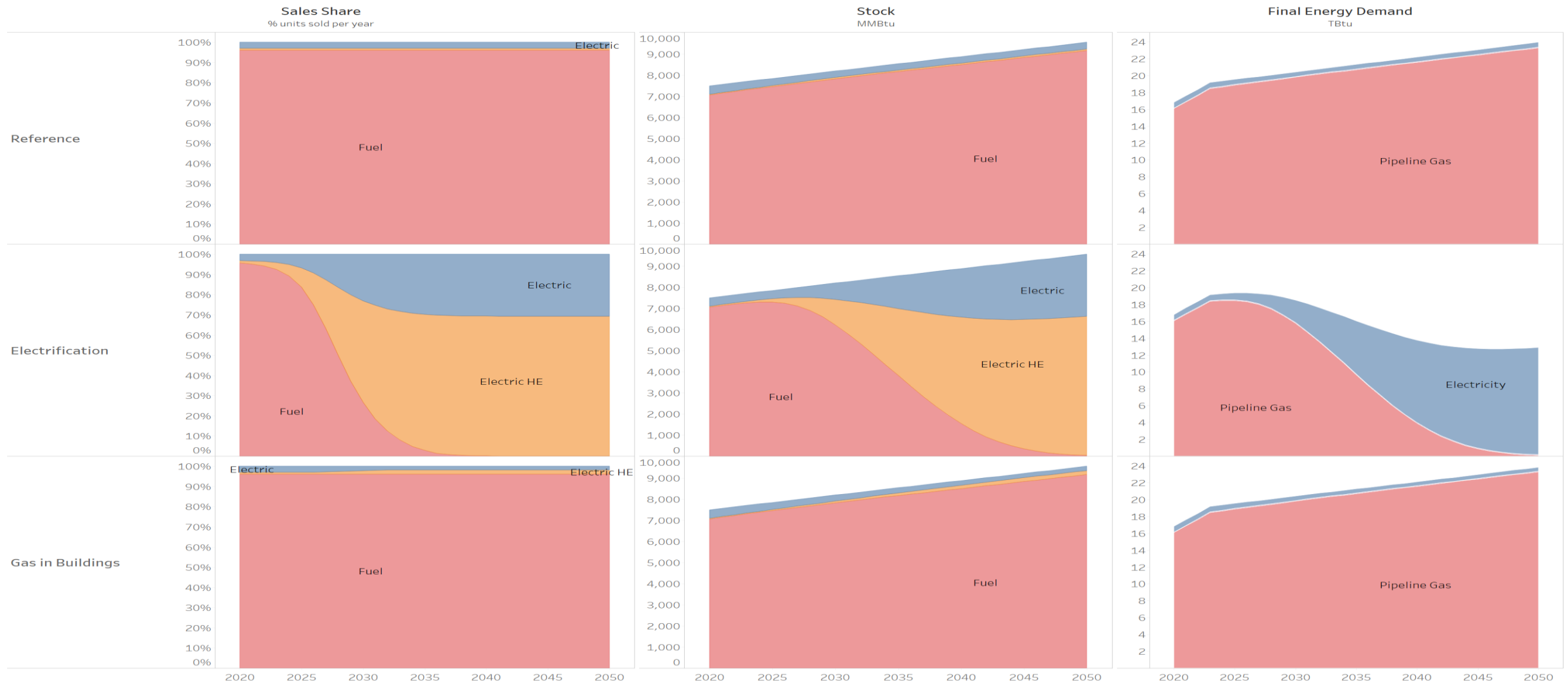
# Residential Water Heating High-Efficiency Technologies Saturate Sales Share by 2030

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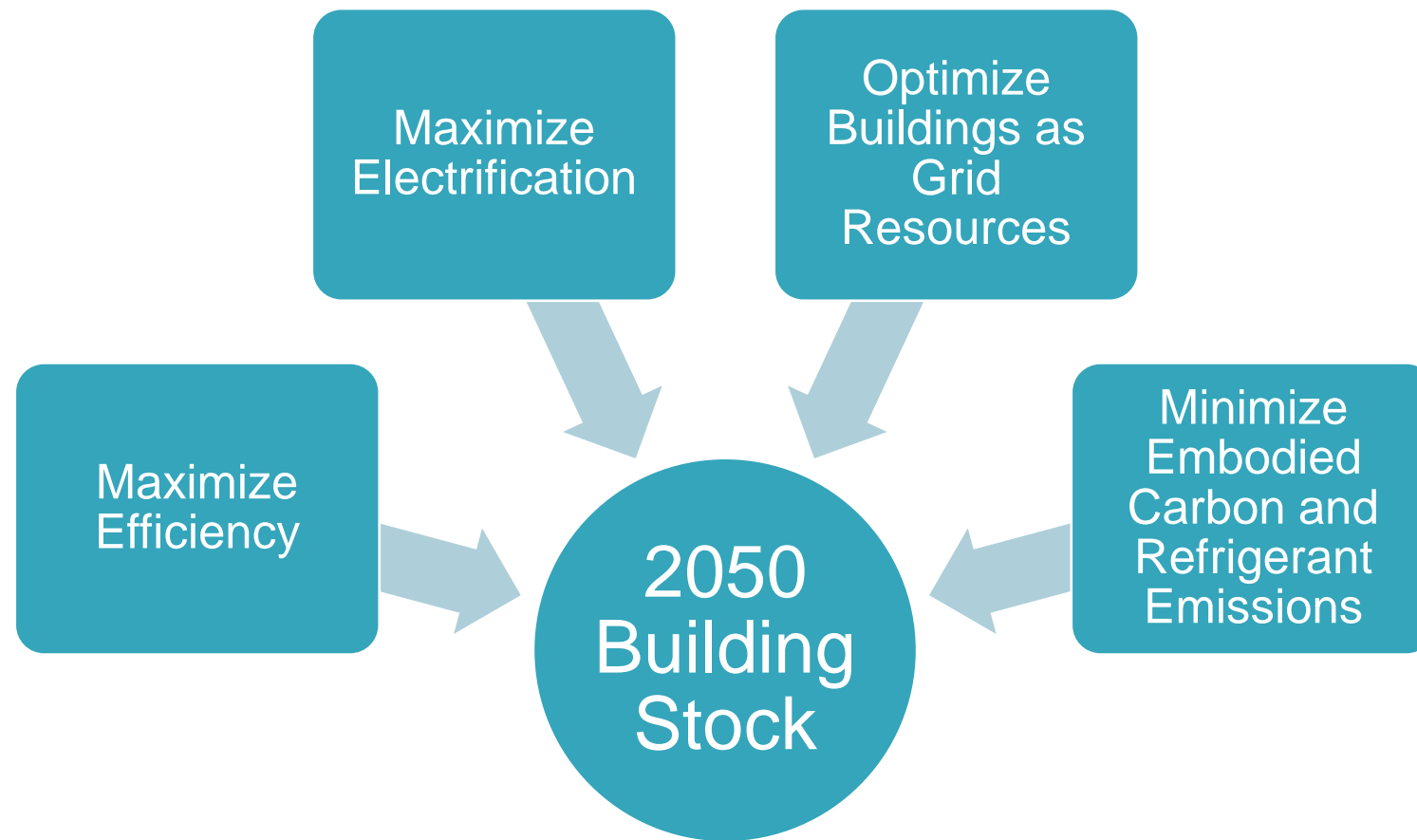


# Commercial Water Heating Electrification Significantly Reduces Final Energy Demand by 2050 Over Other Cases

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# Decarbonizing the Building Stock





# Market Transformation

Achieving the DDP levels of efficiency and electrification implies a near universal and rapid deployment of:

- High-performance building materials
- Passive building design
- High efficiency, mostly electric appliances
- Innovative zero energy and carbon design strategies
- Demand response and grid optimization strategies

# Themes and Policy Needs

- Explicit decarbonization goals
- Holistic and inclusive approach
- Magnitude of inequality
- Alignment across policies, programs, departments, and organizations
- Lost opportunity risk
- Predictability and clear market signals
- Embodied carbon policies
- Deep bench of regional, state, and local organizations
- Common vision, leadership, coordination, and access to technical resources

# Emerging Strategies

- Establish a Building Decarbonization Policy Framework
- Center Equity and Health in Policies and Actions
- Structure Mandates as the Critical Path to Meet Targets
- Align Utility Programs with Mandates
- Drive Market Transformation toward Decarbonization Endpoints

# Transitioning the Building Sector

## Establish a Building Decarbonization Policy Framework

- **Leadership Capacity:** Create state and regional capacity for building decarbonization research, planning, implementation, and leadership.
- **Clear Targets:** Develop a building decarbonization plan with clear, transparent sector-specific goals and targets.
- **Alignment:** Harmonize mandates, market transformation, and programs around performance outcomes.
- **Performance as the Unit of Measurement:** Focus on whole buildings, performance, and standardized performance-based metrics.
- **Value Full Benefits:** Shift from “energy efficiency” to “energy optimization” lens and account for full benefits in cost-effectiveness tests.
- **Industrial-Scale Retrofit Projects:** Promote economies of scale to drive innovation, alignment, and market transformation.
- **Data and Communication:** Create a data, analysis, and tracking platform and central website.
- **Collective Impact:** Strategically amplify and align with efforts by existing organizations and alliances.

# Transitioning the Building Sector

## Center Equity and Health in Policies and Actions

- **Workforce development with a focus on diversity**
  - Build requirements for diversity, training, pre-apprenticeship, and apprenticeship, actions and funding into each policy
  - Increase women- and minority-owned contractor's capacity to perform clean energy and building electrification work
  - Position workers for building electrification work through HVAC training for underemployed, immigrant, formerly incarcerated and other community members with barriers to employment
  - State study of labor market and transition needs to inform how to phase in different policies
- **Couple policies with housing affordability, ability to stay in place, public health policies and outcomes**
  - Value improved public health outcomes in decarbonization metrics
  - Couple housing affordability, rent stabilization mandates with residential building retrofits
  - Financing and mandates to limit building owners from passing on the cost of retrofits onto renters

# Transitioning the Building Sector

## Structure Mandates as the Critical Path to Meet Targets

- **Targets.** Establish formal building sector targets for each segment
- **Tracking and Disclosure.** Residential and commercial performance disclosure
- **Target Driven Codes, Standards, and Stretch Goals**
  - Design for maximum efficiency, electrification, and demand flexibility
  - Develop a residential retrofit standard with staged rollout and comprehensive equity and workforce provisions
  - Create tiered frameworks
  - Include embodied carbon and refrigerant emissions requirements
- **Implementation Support.** Include programmatic support and funding for codes/standards

# Transitioning the Building Sector

## Align Utility Programs with Mandates

- All programs become “early adopter” versions of mandates
- More flexibility on incentives and claiming savings
- Strategic energy management as backbone of commercial/industrial transition
- Prioritize flexible demand
- Index regulations and resource planning to decarbonization goals

# Transitioning the Building Sector

## Drive Market Transformation Toward Decarbonization Endpoints

- Rapid market transformation policy and timeline
- Technology roadmaps
- Statewide heat pump program
- Sync market transformation policy with clean energy labor and industrial policies



# Crosscutting Topics

Building Sector Contributions	Cross-Cutting Benefits
End use electrification	Frees up pipeline gas supplies for transportation and industrial sectors
Detailed building decarbonization and market transformation planning	Informs clean energy labor and industrial policies
Grid optimized buildings	Allow for flexible demand; reduced transmission & distribution (T&D)
Increased regional coordination, energy office capacity, and potentially a “coordinating council” to drive activities toward common goals	Should be integrated with other sectors to allow for cross-sector planning, policy design, and progress tracking
Building EV charging infrastructure requirements	Supports transportation electrification
Eco-districts and microgrids	“Buildings as a resource” supports supply and T&D planning

# Washington State Energy Strategy

## Emerging Strategies and Tactics for the Industry Sector

# Industry Sector TAP

## Outreach

- 13 interviews (6 with AC members)
- 1 inter-agency discussion
- 1 working session with Department of Commerce and Governor's Office

## Research

- >54 reports, articles, presentations, state energy plans, and legislative documents

# Sources Consulted

- Advisory Committee members
- Washington State (CEF; Green Economy)
- BlueGreen Alliance
- American Council for an Energy Efficient Economy
- National Renewable Energy Laboratory/Oak Ridge National Laboratory
- Columbia University – Center on Global Energy Policy
- Energy Futures Initiative
- Published Journal Literature

# Lay of the Land

## Size of the Sector

- 26% of energy demand
- 28% of GHG emissions
  - 13% fossil fuels
  - 6% electricity
  - 9% processes

## Major Industries

- Forest Products
- Petroleum Refining
- Agriculture
- Food Processing
- Cement & Glass
- Manufacturing
- Computing Services

## RCW 43.21F Goals

- Energy Efficiency
- Clean Energy Sector Development
- Reduce Dependence on Fossil Fuels
- Meet State GHG Limits

# Discoveries from Modeling

- By reducing emissions in industry sector, fewer synthetic fuels would be required to decarbonize transportation.
- Industrial carbon capture is an important carbon source for the synthetic fuels required to meet the 2030 target.
- Large, dispatchable electric loads (e.g., H<sub>2</sub> electrolysis) are valuable to the energy system.

# Transitioning the Industry Sector



# Transitioning the Industry Sector

## 1. Decarbonize Existing Fuels and Processes

- Industrial sector emissions cap
- Low carbon fuel standard
- Renewable natural gas substitution
- Carbon pricing (sector-wide or economy-wide)
- Supercharging energy efficiency
- Combined heat and power/heat sharing
- Financial assistance for plant upgrades



# Transitioning the Industry Sector

## 2. Grow Washington's Clean Industries

- Manufacturing portfolio supporting decarbonization of buildings, transportation and electricity sectors
- Industry clusters (e.g., Maritime Blue)
- Siting and permitting streamlining
- High-road jobs in new industries
- Just transitions for workers and communities affected by technology shifts
- Early workforce training

# Transitioning the Industry Sector

## 3. Develop and Advance Resources for Deep Decarbonization

- Hydrogen economy (incl. ammonia/novel liquid fuels)
- Biomass economy
- Carbon capture, use, and storage
- Centers of research and development
- State stewardship of energy and industrial planning

# Transitioning the Industry Sector

## 4. Build Partnerships

- Public-private collaborative goals
- Centralized technical assistance
- Interstate collaborative
  - Level playing field for Energy Intensive Trade Exposed industries
- Industrial policy learning
  - Trade missions can be a vehicle

# Crosscutting Topics

- Industrial sector as clean energy parts, materials, and fuels supplier
- Product life-cycle emissions
- Low carbon fuel standard
- Labor transitions and workforce development
- Carbon pricing, emission caps, and allowance trading
- State stewardship of energy planning
- Regional partnerships

# Washington State Energy Strategy

## Emerging Themes and Strategies for The Electricity Sector

# Electricity Sector TAP

## Outreach

- 20 interviews (6 with AC members)
- 1 inter-agency discussion
- 1 working session with Department of Commerce and Governor's Office

## Research

- >70 reports, articles, presentations, state energy plans, and legislative documents

# Low-Emissions Future

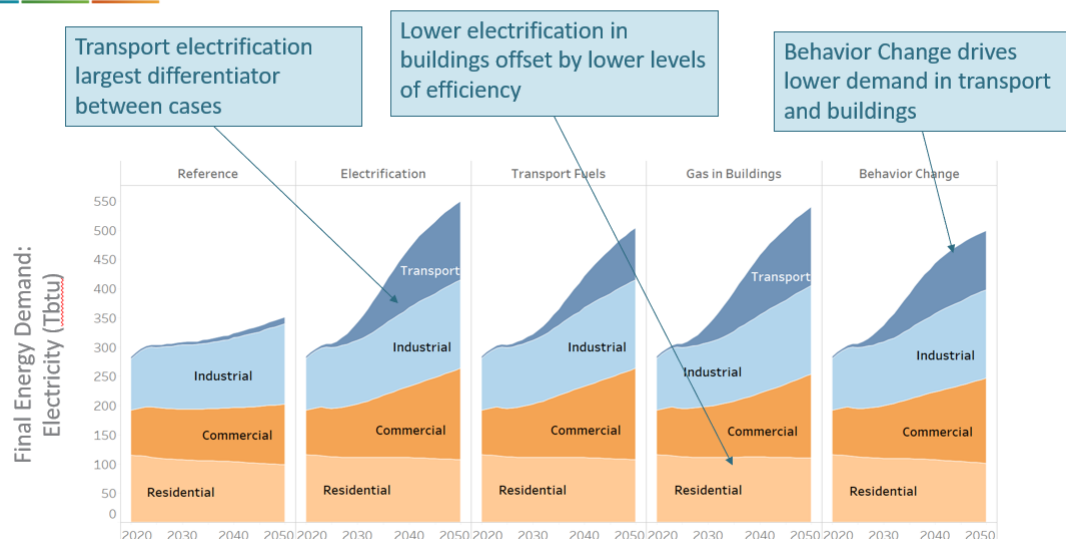
- Role of electricity in the energy economy transformed over the next 30 years to achieve GHG reduction targets.
- Electricity likely the economy's primary energy source, powering most of transportation and industry and providing virtually all energy for heating and cooling buildings – in addition to serving the traditional loads of lighting, appliances, space heating, etc.
- As this transition takes hold, demand for electricity will rapidly increase – later this decade and beyond.
- There will still be a role for low or zero emission liquid and gaseous fuels.

# Discoveries from Modeling

Electricity demand will grow between 70% to 92% over 2020 levels by 2050 - requiring diverse new generation resources

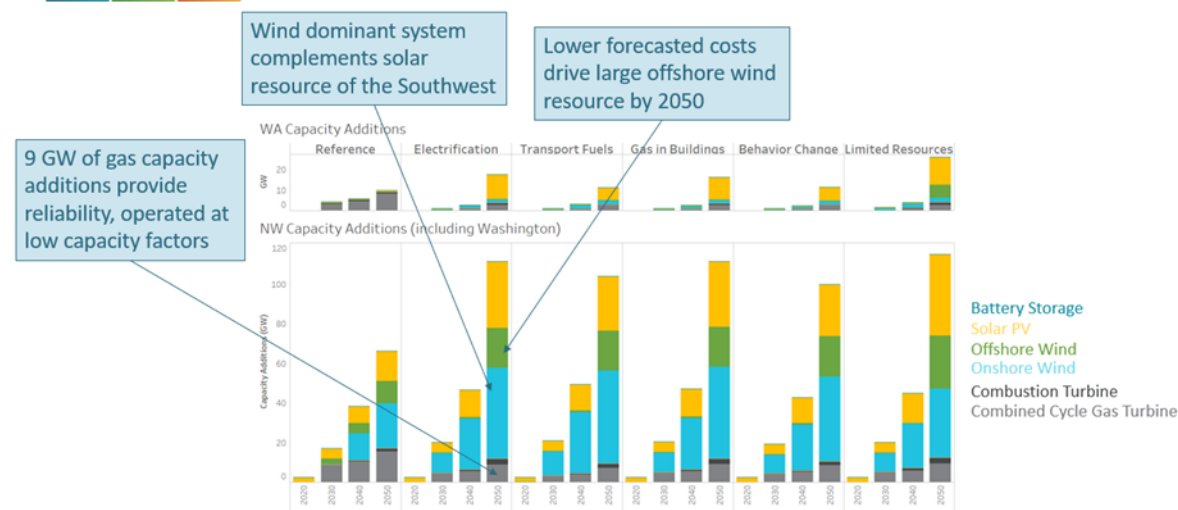
## Final Energy Demand: Electricity

Electricity use in all decarbonization scenarios grows significantly



## Capacity Additions in Washington and the Northwest

Washington part of a larger integrated electricity system





# CETA and Policy Framework

- With CETA and the State's deep decarbonization targets, non carbon-emitting resources will meet increased electricity demand
  - Shift to intermittent resources: new reliability/resource adequacy strategies and grid modernization
- CETA provides a comprehensive framework for achieving 100% clean electricity
  - Sets binding targets
  - Defines a role for grid modernization, demand response, and performance incentive mechanisms in meeting targets
- Equity – CETA requirements and WA state values prioritize sharing of benefits and prevention of undue burdens

# The Transition Ahead in a Nutshell

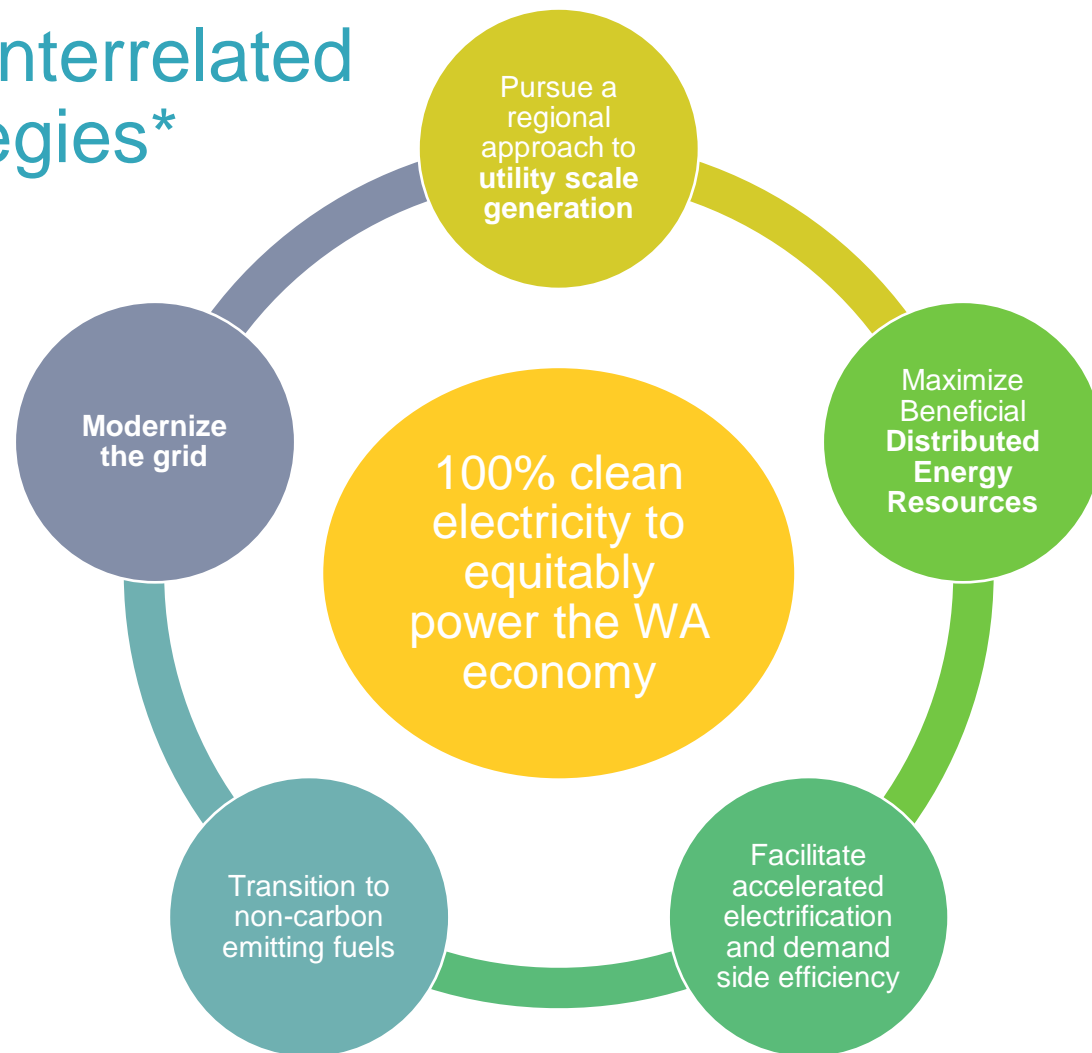
- By 2045, Washington must:
  - **Transition to 100% non-carbon emitting electricity (CETA)**  
AND
  - **Provide electricity to power a large portion of the state's energy needs (38-45%)**
- **The transition must also prioritize equity and maintain or enhance reliability, affordability, and economic competitiveness**
- By 2030, the electricity sector must be **carbon neutral (CETA)** and provide electricity for up to **33-53 Tbtu of new electrification loads**

# Transitioning the Electricity Sector – Emerging Themes

- **Multiple approaches required to meet new demand, including:**
  - Efficiency, distributed energy resources, managing & optimizing load, and new utility-scale generation
  - Requiring grid flexibility, new transmission, new market mechanisms
- **New policies, regulations, and market reforms needed** to ensure resource adequacy, affordability, and equity
  - Build on and leverage CETA
- **New technologies expected to play a significant role, including:**
  - Green hydrogen, carbon capture, decarbonized liquid and gas fuels, IT/AI for grid modernization/optimization, longer duration batteries, other forms of storage
  - Uncertainty regarding feasibility, cost, timelines, emergent technologies, and solutions
- **Opportunity**
  - Jobs, economic development, COVID-19 recovery, innovation, leveraging WA competitive advantages, customer satisfaction, resiliency, health

# Transitioning the Electricity Sector

## Five Interrelated Strategies\*



## Priority Needs:

- New market mechanisms
- Grid Flexibility
- New Transmission and generation capacity

## Regulatory, systemic, institutional reforms to enable:

- Accelerated technology deployment and infrastructure investment
- Innovation/risk taking
- Equitable sharing of benefits and burdens
- Workforce
- Financing

# Pursue a Regional Approach to Utility-Scale Generation

Both in-state and regional generation and transmission resources required

Strategy Elements	Potential Actions
<b>Integrate and Increase Effectiveness of Regional Markets</b>	<p><b>Create regional market mechanisms</b></p> <ul style="list-style-type: none"> <li>Establish a regional reliability/RA standard; WECC-wide EIM</li> <li>Evolve towards an RTO – address/resolve governance issues</li> </ul> <p><b>Reform wholesale markets</b></p> <ul style="list-style-type: none"> <li>Create efficient markets for capacity, ramp, demand response</li> <li>If carbon pricing, harmonize across jurisdictions</li> </ul> <p><b>Implementation</b></p> <ul style="list-style-type: none"> <li>Build on existing efforts – NWPCC, NWPP</li> <li>Implement CETA regulations consistent with regional integration</li> <li>Prioritize/enhance governor, Commerce, &amp; UTC level coordination with other states</li> </ul>
<b>Expand Transmission Capacity</b>	<ul style="list-style-type: none"> <li><b>In-state:</b> planning, siting, &amp; permitting consistent with CETA</li> <li><b>Interstate:</b> planning, coordination, siting &amp; permitting, engage with FERC</li> <li>Engage stakeholders; Incorporate equity criteria to ensure no undue burdens</li> </ul>
<b>Accelerate In-State Deployment of Non-Carbon Emitting Resources</b>	<ul style="list-style-type: none"> <li>Conduct planning – ‘renewable potential assessment’</li> <li>Streamline permitting for preferred decarbonization projects</li> <li>Provide incentives for deployment in preferred locations</li> </ul>

# Maximize Beneficial Distributed Energy Resources

## DER includes:

- Rooftop Solar
- Demand response
- Demand management
- Distributed storage
- District energy; micro grids
- Buildings as thermal storage
- Electric vehicles
- Smart appliances

Strategy Elements	Potential Actions
<b>Market Mechanisms</b>	<ul style="list-style-type: none"> <li>• Reform retail rates: time-varying prices, peak-coincident demand charge</li> <li>• Incorporate equity into rates: progressive rate structures, lifeline rates, opt-in – avoid undue burdens</li> <li>• Create markets for aggregated demand response</li> </ul>
<b>Regulatory Policies</b>	<ul style="list-style-type: none"> <li>• Standardize DER interconnection and permitting processes</li> <li>• Allow utility ownership of rooftop solar, DER</li> <li>• Incorporate distributed resource planning into IRP;</li> <li>• Fully implement CETA DR provisions</li> <li>• Expand use of performance-based &amp; multi-year rate-making (per CETA)</li> <li>• Mandate DER (e.g. storage, inverters with rooftop solar)</li> </ul>
<b>Incentives for Tech Deployment</b>	<ul style="list-style-type: none"> <li>• Equalize utility returns on capital and operational investments</li> <li>• Increase net metering capacity limit</li> </ul>
<b>Access to Financing</b>	<ul style="list-style-type: none"> <li>• Create Green Bank for DER</li> <li>• Establish an Energy Trust of WA</li> </ul>
<b>Access to Information</b>	<ul style="list-style-type: none"> <li>• Require collection, sharing of distribution level data, (e.g. hosting capacity)</li> <li>• Gather and publish data on DER deployment, rooftop solar, EVs, customer energy usage (opt-in)</li> </ul>

# Modernize the Grid – Flexible, Smart, Secure

- Foundational investment to enable decarbonization – both distribution and transmission
- Grid “productivity” declining and costs increasing; infrastructure is old; analog not digital
- Create a smart, flexible, optimized grid allowing two-way energy flow and management

Strategy Elements	Potential Actions
<b>Regulatory Policies</b>	<ul style="list-style-type: none"> <li>▪ Make grid modernization an explicit state policy goal</li> <li>▪ Allow return on grid modernization investments required and used for decarbonization &amp; innovation</li> <li>▪ Require utility grid modernization plans</li> <li>▪ Mandate universal AMI (w/ opt-in)</li> </ul>
<b>Technology Deployment</b>	Deploy advanced grid technologies <ul style="list-style-type: none"> <li>▪ Smart grid technologies</li> <li>▪ Distributed energy resource management systems</li> <li>▪ PNNL grid architecture</li> <li>▪ AMI/smart meter infrastructure &amp; devices</li> <li>▪ Grid security</li> </ul>
<b>Accelerate Innovation</b>	<ul style="list-style-type: none"> <li>▪ Deploy Clean Energy Fund</li> <li>▪ Conduct pilots</li> <li>▪ Connect utilities with labs &amp; universities</li> <li>▪ Access Washington’s IT, AI, and R&amp;D leadership</li> </ul>

# Transition to Non-Carbon Emitting Gas and Liquid Fuels

- Per DDP: need to decarbonize gas & liquid fuels
- Opportunity/need for technology innovation: gas & liquid fuels produced from electricity
  - “Green hydrogen” from electrolysis
  - “Electric fuels” – hydrogen w/ CO<sub>2</sub> from carbon capture
- Renewable natural gas
- Sustainable biofuels

Strategy Elements	Potential Actions
<b>Accelerate Innovation</b>	<ul style="list-style-type: none"> <li>▪ Grant program for electro-fuel technologies – Clean Energy Fund</li> <li>▪ Green hydrogen program (European models)</li> </ul>
<b>Incentivize Decarbonization</b>	<ul style="list-style-type: none"> <li>▪ Investment, production, sales tax credit for electro-fuel production</li> <li>▪ Require accelerated depreciation of new fossil fuel assets deployed on the grid consistent with decarbonization targets</li> <li>▪ CETA for natural gas</li> <li>▪ Implement Low Carbon Fuel Standard</li> <li>▪ Strengthen requirements to minimize methane emissions from gas used in WA</li> </ul>



# Facilitate accelerated electrification and demand side efficiency

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- Utilities can play a proactive role in accelerating electrification, including with financing, market transformation, & deployment
- Need policy guidance and incentives

Strategy Elements	Potential Actions
Clear Policy Guidance	<ul style="list-style-type: none"><li>▪ Update vehicle electrification targets</li><li>▪ Develop building electrification, efficiency, and managed loads targets</li><li>▪ Define grid modernization goals and set targets</li><li>▪ Guidance (state policy) for using rate design to drive efficiency, decarbonization, &amp; electrification</li><li>▪ Expanded use of performance-based rate design</li></ul>
Demand-Side Market Preparation	<ul style="list-style-type: none"><li>▪ Create standards and programs for smart appliances</li><li>▪ Integrate DR capabilities into building codes</li></ul>
Utility-Led Initiatives	<ul style="list-style-type: none"><li>▪ Enable/incentivize utility investment in infrastructure and equipment that enables electrification</li><li>▪ Allow utility investment in/ownership of demand side equipment</li><li>▪ Promote utility-led educational programs on EVs and other forms of electrification</li><li>▪ Increase use of time varying rates; incentivize daytime/workplace charging</li></ul>

# Embed Equity in Planning & Implementation; Advance Energy Access and Energy Democracy

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- Build on CETA
- Proactively engage with - and provide funding for - community groups to address equity in rulemaking and energy project siting processes
- Prioritize investment in most burdened communities using environmental health disparities mapping
- Give regulators authority to include equity, health, and environmental considerations in utility rulemakings
- Define and publicly track metrics for equitable access to rooftop solar, electric vehicles, and other DERs
- Expand opportunities for community-owned clean energy infrastructure
- Expand low income rate assistance and weatherization