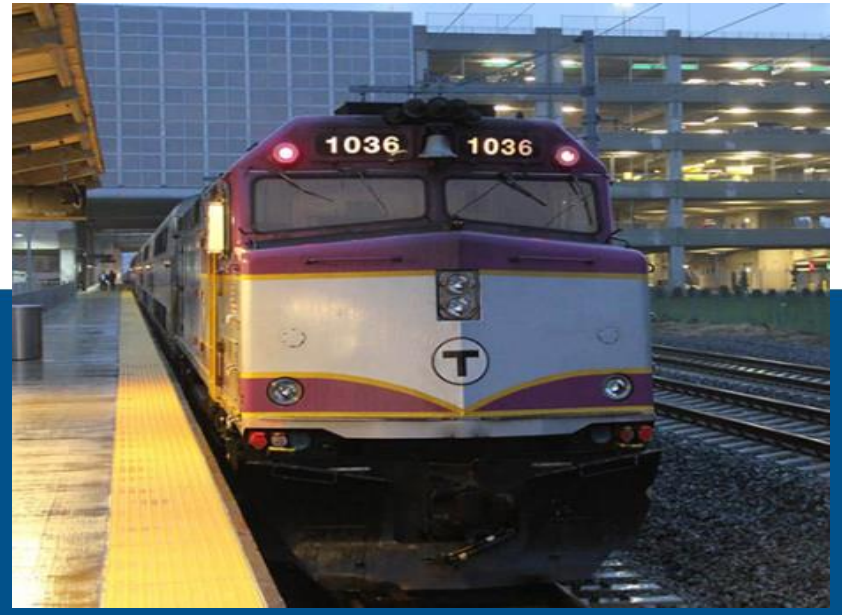
2023 RIDOT Carbon Reduction Plan

Executive Climate Change Coordinating Council (EC4)

June 21, 2023

Presented by Pamela Cotter, RIDOT Administrator of Planning



Agenda and Presentation Outline

- Project Motivation
- CRP Content
  - Document Outline
  - Federal Requirements
- Current Progress and Next Steps
  - Baseline Inventory
  - CRP Project Identification and Analysis

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Project Motivation

RIDOT's development of a Carbon Reduction Plan serves two primary purposes:

1. Support RI's Clean Energy Targets

- **Net Zero by 2050** (2021 Act on Climate)
- 45% below 1990 levels by 2035
- 80% below 1990 levels by 2040

2. Secure Federal Funding Eligibility

- Infrastructure Investment and Jobs Act (2021)
- **$35 million available** from FFY 2022 — 2026
- Must use funds for cost-effective emissions reduction projects in STIP

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CRP Content: Document Outline and Federal Requirements

- RIDOT CRP – Proposed Outline
  1. Executive Summary
  2. Overview and Objectives
  3. Strategy Development / Stakeholder Coordination
  4. Baseline Inventory and Forecast
  5. Scenario Analysis: Advanced Vehicle Technology
  6. Current / Planned Transportation GHG Reduction Strategies
  7. GHG Reduction Benefits, Cost-Effectiveness and Co-Benefits by Project Type
  8. GHG Reduction Analysis of STIP
  9. Emissions Benefits of Carbon Reduction Program Projects
  10. Appendices

- CRP Federal Requirements
  1. State develops strategy in consultation with MPO
  2. Identifies and Supports Projects to Reduce Emissions
  3. Quantifies Transportation Emissions
  4. Terms Fit State Context
  5. Due November 15, 2023

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CRP Content: Document Components and Federal Requirements

CRP Federal Requirement:	RIDOT CRP Document Section:
Developed in Consultation with MPO	➢ Stakeholder Coordination
Identifies and Supports Projects to Reduce Emissions	➢ Stakeholder Coordination ➢ Summary of Existing GHG Reduction Plans ➢ Project Cost-Effectiveness Summary ➢ Emissions Benefits of CRP Projects
Quantifies Transportation Emissions	➢ Baseline Inventory and Forecast ➢ Scenario Analysis: Advanced Technology ➢ STIP Analysis (Projects of Regional Significance)
Aligns With Rhode Island's Goals (Act on Climate)	➢ Stakeholder Coordination ➢ Baseline Inventory and Forecast ➢ Summary of Existing GHG Reduction Plans ➢ STIP Analysis (Project Prioritization)

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Current Progress: Baseline Inventory Analysis – Metric Ton CO_2 Equivalent

	2021	2035	2040	2050
On-Road Private	3,131,761	2,580,246	2,502,362	2,455,581
On-Road Public	24,270*	24,270	24,270	24,270
Rail Transit	15,992	1,842	1,798	1,746
Construction and Maintenance	10,203	7,329	7,522	7,421

On-Road Private Mobile Sources

- Constitute vast majority of transportation emissions

**Public Transportation estimates are derived from 2022 data*

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Current Progress: Baseline Inventory Analysis

Key Assumptions – to encapsulate “baseline” scenario conditions:

<u>Private Vehicles</u>

-RI fulfills its net-zero electricity grid goals

-Low to moderate vehicle electrification through 2050

<u>Public Transportation</u>

-No capacity or vehicle technology changes through 2050

<u>Rail Transit</u>

-RI fulfills its net-zero electricity grid and rail transit goals

-Passenger rail-mileage relatively constant 2019 - 2050

<u>Construction and Maintenance</u>

-Lifetime of all construction = 30yrs

-STIP projects with no specific locations omitted

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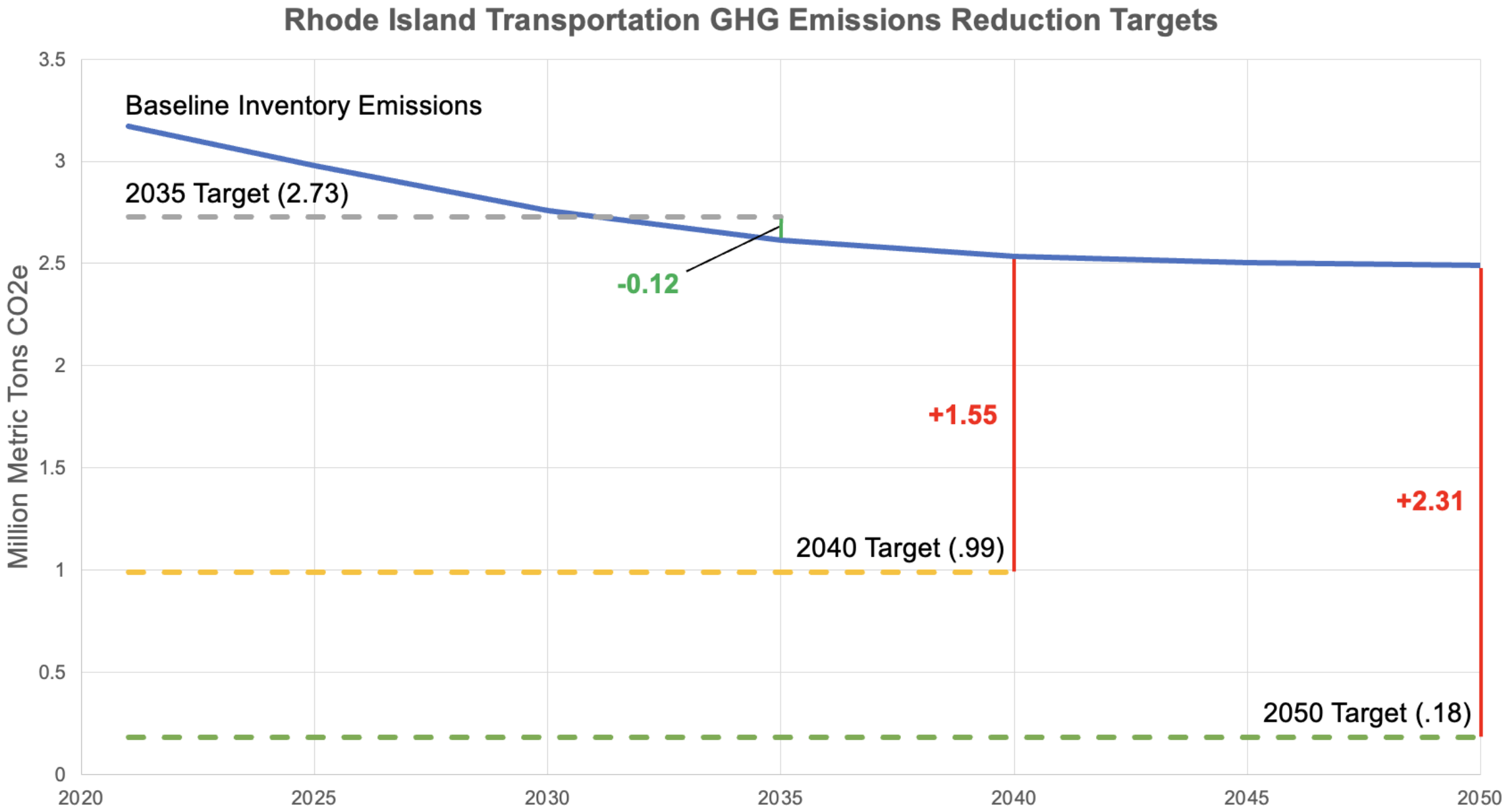
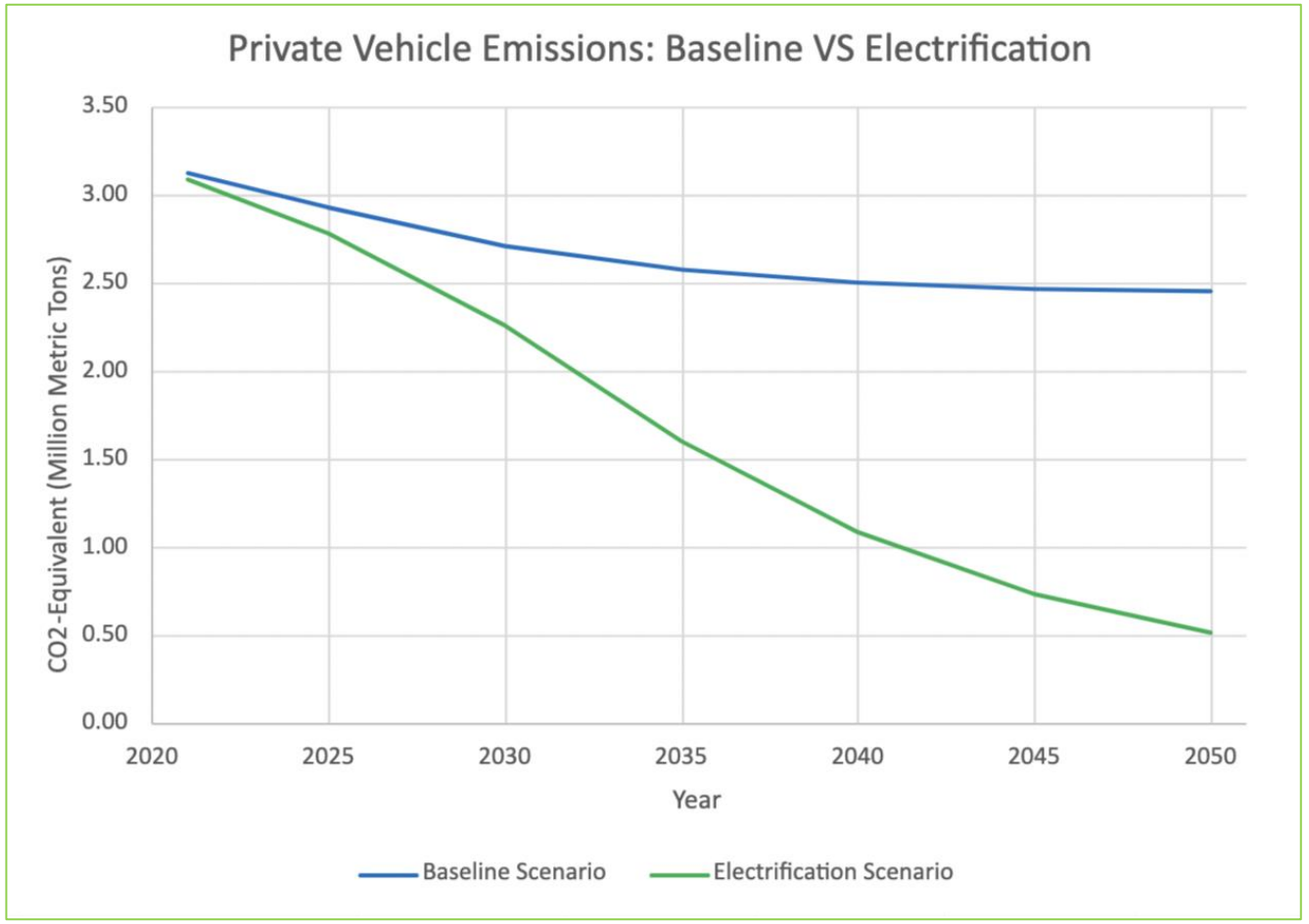
Current Progress: Baseline Inventory Analysis



Current Progress: Electrification Scenario Analysis

- Forecasted using California Advanced Technology Regulation scenario (ZEV sales requirements)
- RI Goal: 400,000 EVs on road by 2030 / interim goal 50,000 by 2025
- **~30 MMT** CO2e total reduction from 2021 – 2050



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Current Progress: Summary of Existing Plans

Action	Impact	Lead(s)
Increase light-duty ZEV penetration to at least 10% by 2030.	The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy.	Administration (RIDOT, RIDEM, OER, DMV, Commerce, RIIB)
Implement Transit Forward RI 2040, Rhode Island's Transit Master Plan, to grow transit ridership from 53,000 to 87,000 daily passenger trips. Look to the Transit Master Plan and Bicycle Mobility Plan for next steps and consider committing resources to key projects.	The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy	RIPTA, Division of Statewide Planning, RIDOT
Reduce RIPTA's carbon footprint by decarbonizing Rhode Island's transit fleet.	The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy	RIPTA
Maintain increasing fuel economy and low-and zero-emission vehicle standards	The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy	RIDEM
Incentivize electric mobility	Enables switch to electric vehicles	Office of Energy Resources
Model climate impacts of transportation demand (in Unified Planning Work Program)	Allows weighing climate impacts of transportation investment decisions among policy objectives	Division of Statewide Planning, RIDOT and RIDEM
Develop 'complete streets' state plan leveraging federal funding	Reduces fuel consumed through decrease in vehicle miles traveled and encourages lower-emissions mobility	Division of Statewide Planning, RIDOT and RIPTA

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Current Progress: STIP Emissions Reduction Analysis

STIP Project	Primary Actions	Project Type(s)	Projected Cost	Estimated GHG Effects Upon Completion
Opening of Cranston Canyon	Rebuild six structures in Bridge Group 51B; create and reorient lanes at I-295 North.	Traffic operation and flow improvements; roadway state of good repair.	$85M	Annual emissions reduced by ~4,095 tons CO2e / year
Route 146 Reconstruction	Bridge replacements; roadway repaving; traffic signal removal.	Traffic operation and flow improvements.	$196M	Annual emissions reduced by ~5,922 tons CO2e / year
Completion of the I-95 Missing Move and Quonset Connector Ramps	Construct two new highway ramps to complete the interchange of I-95 and Route 4.	Traffic operation and flow improvements; capacity expansion.	$135M	Annual emissions reduced by ~513 tons CO2e / year

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Current Progress: CRP Project Identification

CRP Project Selection Guidance:
Summary of Cost-Effectiveness Analysis in *Clean Transportation & Mobility Innovation Report*

Average Strategy Effectiveness				
Transportation Strategy	**GHG**	**PM2.5**	**Jobs**	**Health Benefits**
VMT[1] Reduction & Mode Shift	57%	53%	53%	**70%**
Transportation System Efficiency	50%	23%	**83%**	33%
Vehicle & Fuel Technology	**100%**	**100%**	42%	92%

Strategy cost-effectiveness: Best project options					
Transportation Strategy	**Projects**	**GHG**	**PM2.5**	**Jobs**	**Health Benefits**
VMT Reduction & Mode Shift	*Improved land use & smart growth*	+++	++	++	++
	Bicycle investment	++	++	++	+++
Transportation System Efficiency	*Bus service: Efficiency*	++	+	+++	++
	Traffic flow improvements	+++	-	+++	-
Vehicle & Fuel Technology	*Light-duty EVs*	+++	+++	+	++
	Electric transit buses	+++	+++	+	++

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Next Steps: CRP Project Identification

- STIP Projects *Currently* Selected for CRP Funding:

STIP Project Type (Eligibility Criteria #)	CRP Funding ($ million)
Sidewalk Installation (1)	0.6
Bike Path Preservation (1)	7.1
Statewide Congested Corridors Upgrades (2)	6.0
ITS Additions; Congestion Management (2)	2.8
Safety Service Patrol (2)	1.6
Traffic Signal Management (2, 3)	1.2
Smart Corridors Initiatives (2)	0.2
TOTAL	**19.5**

- Project Eligibility Requirements (Abbreviated) – May Reduce Emissions Via:

1. **Encouraging Alternative Travel Modes**
2. **Congestion management or traffic flow improvements**
3. Energy-efficiency Improvements for traffic control devices
4. Supporting deployment of alternative-fuel vehicles
5. Facilities emissions reductions

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Next Steps: Project Identification and Analysis

- Stakeholder Coordination
  - Consult EC4, Federal Highway Administration, and MPO in project identification and broader CRP development process
  - Establish additional **Public Comment Period**
- Revise and Finalize Selection of CRP-Funded Projects
  - Clarify project eligibility constraints
  - Develop strategy to allocate **remaining ~ $15 million federal funding**
  - Optimize selection to RI Context; e.g. **cross-reference project selection with other statewide goals** (RI Act on Climate)
  - Perform more **quantitative** cost-effectiveness analysis of prospective CRP-funded projects

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Summary

- Project Motivation
  - Support 2021 Act on Climate Goals and Secure Federal Funding Eligibility
- Current Progress
  - Baseline Inventory and Electrification Analyses: **baseline scenario falls significantly short of long-term targets**
  - Summary and Analysis of Existing Plans / Major STIP Projects
  - Initial CRP Project Identification: primarily **congestion management** and **mode shift**
- Next Steps
  - Stakeholder Coordination: new policies will achieve our targets if we have the **support and adaption of the public.** EC4's efforts to **engage residents** in the policy process and **define what is needed from the public** will be crucial for reaching RI's climate goals.
  - Revise and Finalize Project Selection

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Any questions?

Thank You

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