# Climate Dashboard

EC4 Advisory Board
April 27, 2022

**RIEC⁴**

# Act on Climate Mandates

On April 14, 2021, Governor Dan McKee signed into law the 2021 Act on Climate, which sets mandatory, enforceable climate emissions reduction goals leading the state to achieve net-zero emissions economy-wide by 2050. This legislation updates the previous 2014 Resilient Rhode Island Act, positioning the state to boldly address climate change and prepare for a global economy that will be shifting to adapt to clean technology.

**Act on Climate as it pertains to a Climate Change Dashboard:**

*"To support the council's (EC4) work, state agencies shall:*
*Foster public transparency by developing public metrics and an online public dashboard that shall track both emissions reductions and sources of energy consumed by the state. The metrics and the dashboard shall be updated at least annually."*

R.I. Gen. Laws § 42-6.2-3.

www.climatechange.ri.gov/aoc

# EC4 Memorandum

**February 2022**:

The 2021 Act on Climate requires the Executive Climate Change Coordinating Council (EC4) to "foster public transparency by developing public metrics and an online public dashboard that shall track both emissions reductions and sources of energy consumed by the state" (RIGL 42-6.2-3.13).

The EC4 is requesting advice and guidance from the Advisory Board to develop a draft outline of a climate dashboard by October 31, 2022.

**Guiding Principles:**

➢ Meet the letter of the law
➢ Maximize transparency
➢ Consider facets of climate change beyond emissions
➢ Build on best practices
➢ Balance information with administration
➢ Consider the dashboard a living document

# EC4 Memorandum

**Existing Efforts**: RIDEM currently maintains a climate dashboard available online (left). A number of EC4 member agencies feed information and data into this existing dashboard. This dashboard highlights seven key metrics, alongside explanations of why each metric matters. The dashboard is updated quarterly (approximately) and requires about 40 staff hours each year.

**"In lieu of revising the existing dashboard, we ask that the Advisory Board consider this request as a carte blanche. First, identify the key metrics to represent on an ideal dashboard, and then revise according to the guiding principles."**

**To view RI's Climate Change Snapshot, visit:**
www.climatechange.ri.gov/climatesnapshot

# Climate Dashboards across Different States

## What do different states track on their dashboards?

ZEV & State green-fleets

Fuel use
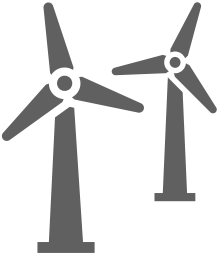
Renewable energy generation
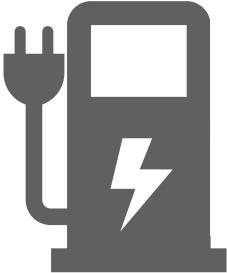
EV Charging Infrastructure

Sea level rise: potential and flooding

Total energy consumption/generation
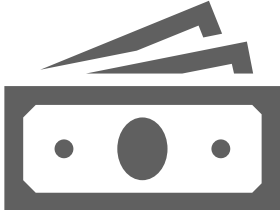
Utility cost & savings

Drought

Resiliency

Weather: storms, temperature, precipitation
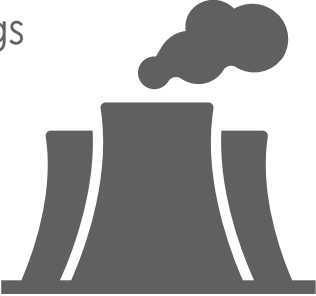
RGGI Funding

# Climate Dashboards across Different States
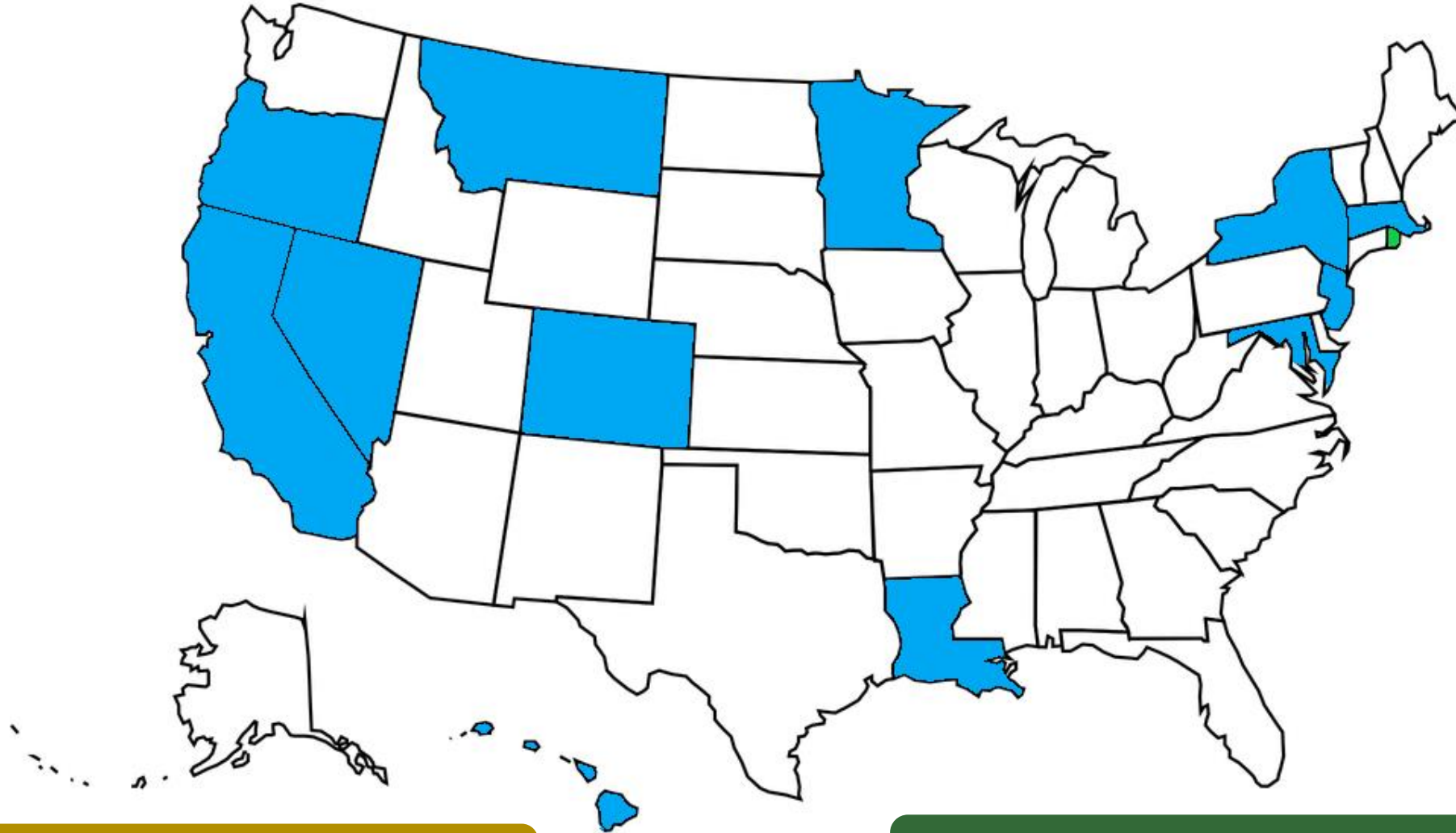


To view climate dashboards, visit:
**Linktr.ee/RIEC4**

**13 States with Climate-Related Dashboards**
(varying purposes)

# Dashboards Across the US: Colorado

Maintained by The Colorado Department of Health and Environment, the 'Colorado Greenhouse Gas Metrics' dashboard is a comprehensive overview of CO's greenhouse gas reduction. However, this dashboard goes deeper into metrics and tracking to show in detail how close the state is to reaching its 2025 goal. Further information on CO's dashboard to come.

## This Dashboard Tracks:

Total energy consumption/generation

Transportation

Fossil fuel production

Agriculture

Climate Equity
Air Quality, Energy Burden, Community Engagement
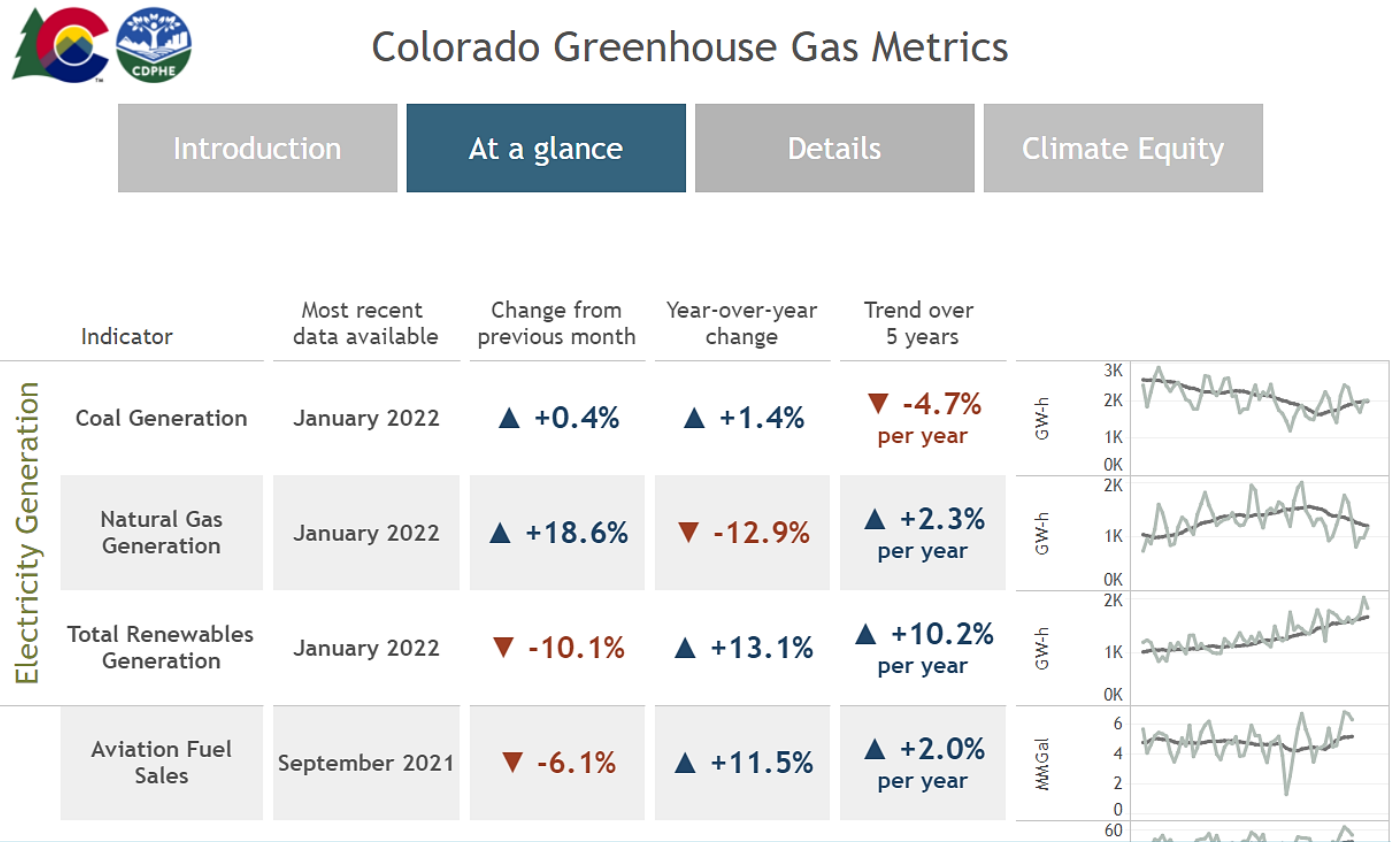
### Colorado Greenhouse Gas Metrics

| Introduction | At a glance | Details | Climate Equity |
|---|---|---|---|

| Indicator | Most recent data available | Change from previous month | Year-over-year change | Trend over 5 years | |
|---|---|---|---|---|---|
| Coal Generation | January 2022 | ▲ +0.4% | ▲ +1.4% | ▼ -4.7% per year | GW-h |
| Natural Gas Generation | January 2022 | ▲ +18.6% | ▼ -12.9% | ▲ +2.3% per year | GW-h |
| Total Renewables Generation | January 2022 | ▼ -10.1% | ▲ +13.1% | ▲ +10.2% per year | GW-h |
| Aviation Fuel Sales | September 2021 | ▼ -6.1% | ▲ +11.5% | ▲ +2.0% per year | MMGal |

*(Left axis label: Electricity Generation)*

To view climate dashboards, visit: Linktr.ee/RIEC4

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## Best Practices:

- Data is accompanied by explanations
- Easily viewable and understandable trends
- The inclusion of climate equity (mapping)
- Downloadable data and images
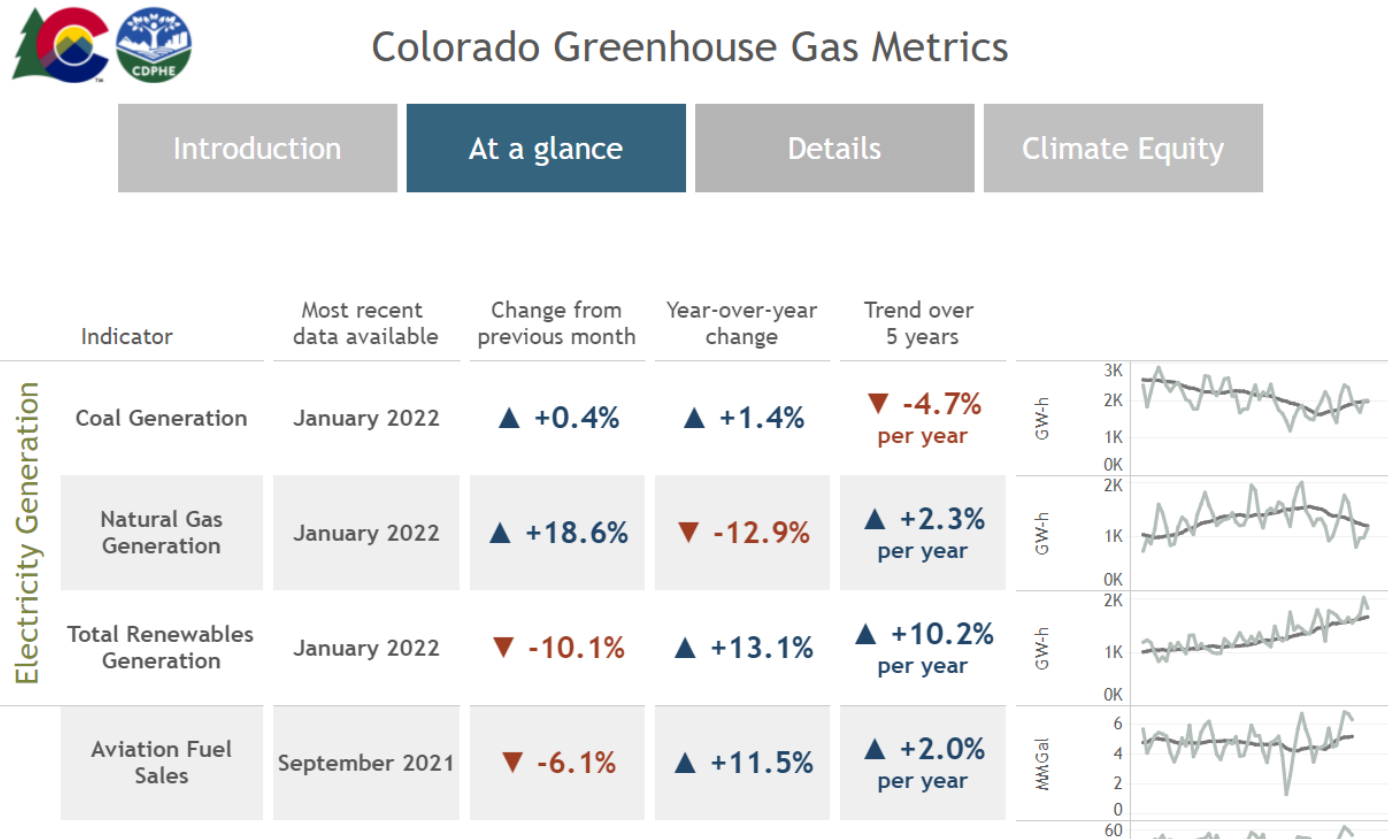
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**To view climate dashboards, visit: Linktr.ee/RIEC4**

# Dashboards Across the US: Connecticut

The Connecticut Office of Policy and Management developed their 'GreenerGov CT' dashboard internally following Governor Lamont's Executive Order 1 (April 2019). This dashboard is maintained internally and was developed on Tableau Public, a free program that displays data in an interactive way. The dashboard is updated annually and requires only 1-2 days to do so. EnergyCAP is used to collect data from state agencies as well as private electric and gas companies.

## This Dashboard Tracks:

Lead by Example Program

Emissions by state agencies

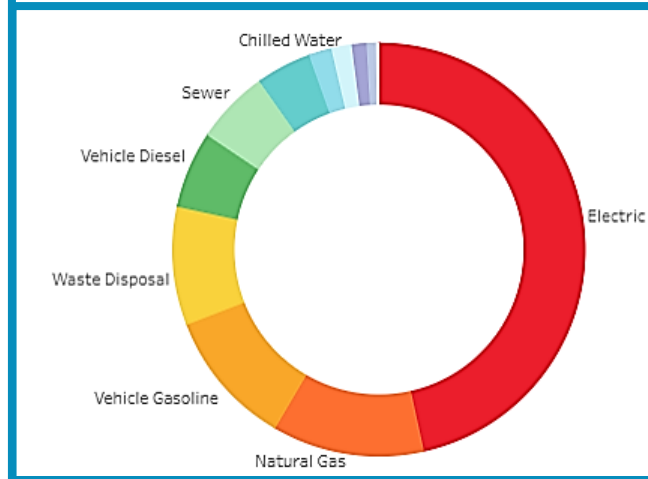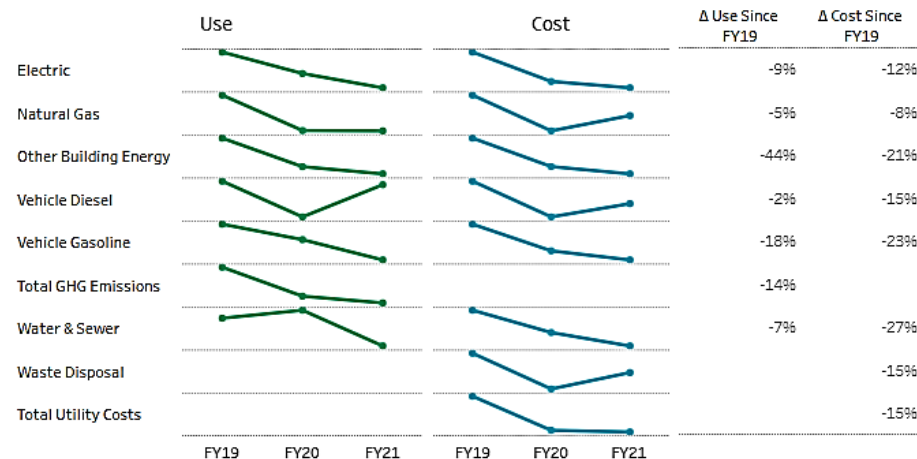| | | Use | | | Cost | | |
|---|---|---|---|---|---|---|---|
| | | FY19 | FY20 | FY21 | FY19 | FY20 | FY21 |
| Electric | kWh | 281,200,258 | 265,891,594 | 255,642,547 | $45,146,637 | $40,838,138 | $39,900,665 |
| Natural Gas | CCF | 12,055,819 | 11,504,576 | 11,499,405 | $11,036,370 | $9,561,239 | $10,191,343 |
| Other Building Energy | MMBtu | 442,605 | 287,513 | 248,498 | $5,895,913 | $4,906,938 | $4,654,274 |
| Vehicle Diesel | Gal | 1,862,910 | 1,559,813 | 1,832,485 | $6,054,458 | $4,617,048 | $5,149,283 |
| Vehicle Gasoline | Gal | 4,411,549 | 4,068,020 | 3,619,038 | $11,867,067 | $9,844,608 | $9,156,165 |
| Total GHG Emissions | mtCO2e | 228,696 | 203,234 | 197,297 | | | |
| Water & Sewer | Kgal | 3,405,640 | 3,474,717 | 3,166,331 | $11,980,086 | $9,930,696 | $8,698,643 |
| Waste Disposal | | | | | $9,354,523 | $6,709,914 | $7,923,136 |
| Total Utility Costs | | | | | $101,335,055 | $86,408,582 | $85,673,509 |

*Gasoline and diesel costs estimated based on average monthly cost from EIA.gov, $2.53 for gasoline and $2.81 for diesel in FY21; $2.42 for gasoline and $2.96 for diesel in FY20; $2.69 for gasoline and $3.25 for diesel in FY19.

**Other Building Energy sources include oil, propane, steam, chilled water, and hot water.

| | Use | Cost | Δ Use Since FY19 | Δ Cost Since FY19 |
|---|---|---|---|---|
| Electric | | | -9% | -12% |
| Natural Gas | | | -5% | -8% |
| Other Building Energy | | | -44% | -21% |
| Vehicle Diesel | | | -2% | -15% |
| Vehicle Gasoline | | | -18% | -23% |
| Total GHG Emissions | | | -14% | |
| Water & Sewer | | | -7% | -27% |
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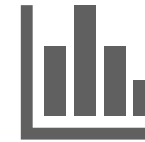
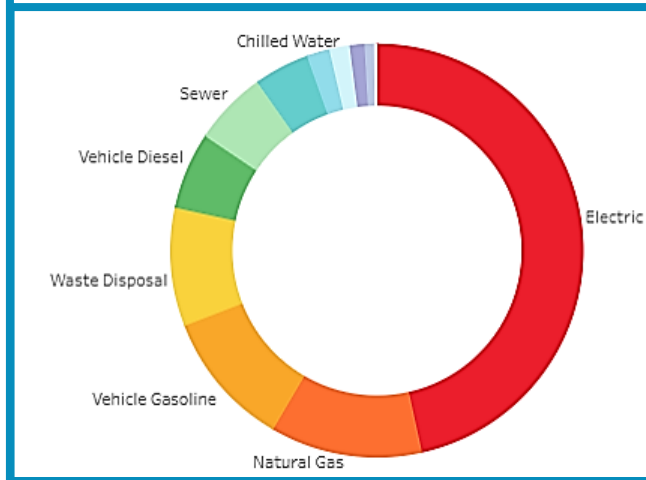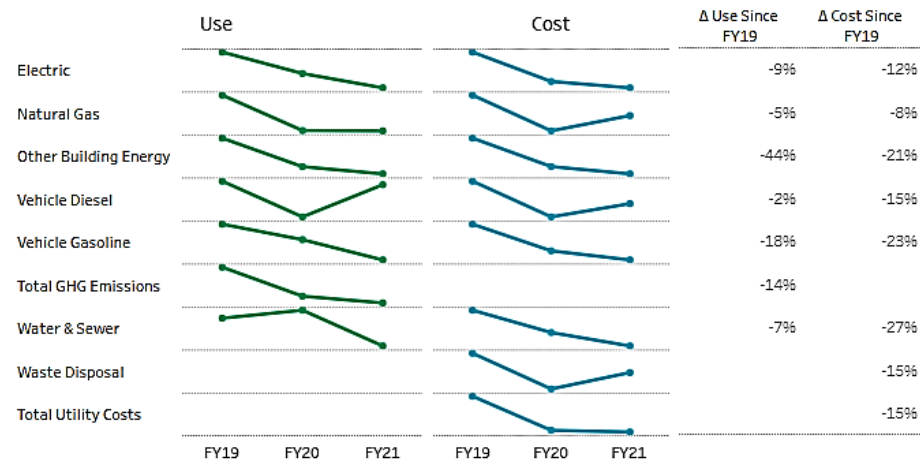- Inexpensive interface program
- Interactive data displays
- Easily comprehendible, not overcomplicated

| | | Use | | | Cost | | |
|---|---|---|---|---|---|---|---|
| | | FY19 | FY20 | FY21 | FY19 | FY20 | FY21 |
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| Total Utility Costs | | -15% |

Chilled Water · Sewer · Vehicle Diesel · Waste Disposal · Vehicle Gasoline · Natural Gas · Electric

**To view climate dashboards, visit: Linktr.ee/RIEC4**

# Dashboards Across the US: Hawaii

The Aloha+ Challenge website tracks Hawaii's local contribution to all 17 SDGs with 6 priority areas, 37* targets & 200+ community-based indicators. Hawaii uses the dashboard as an open-data dashboard that provides accountability and informs decision-making as a part of an ongoing stakeholder process. The Aloha+ dashboard was built using ArcGIS Hub and is supported and maintained by a team of HI state employees.



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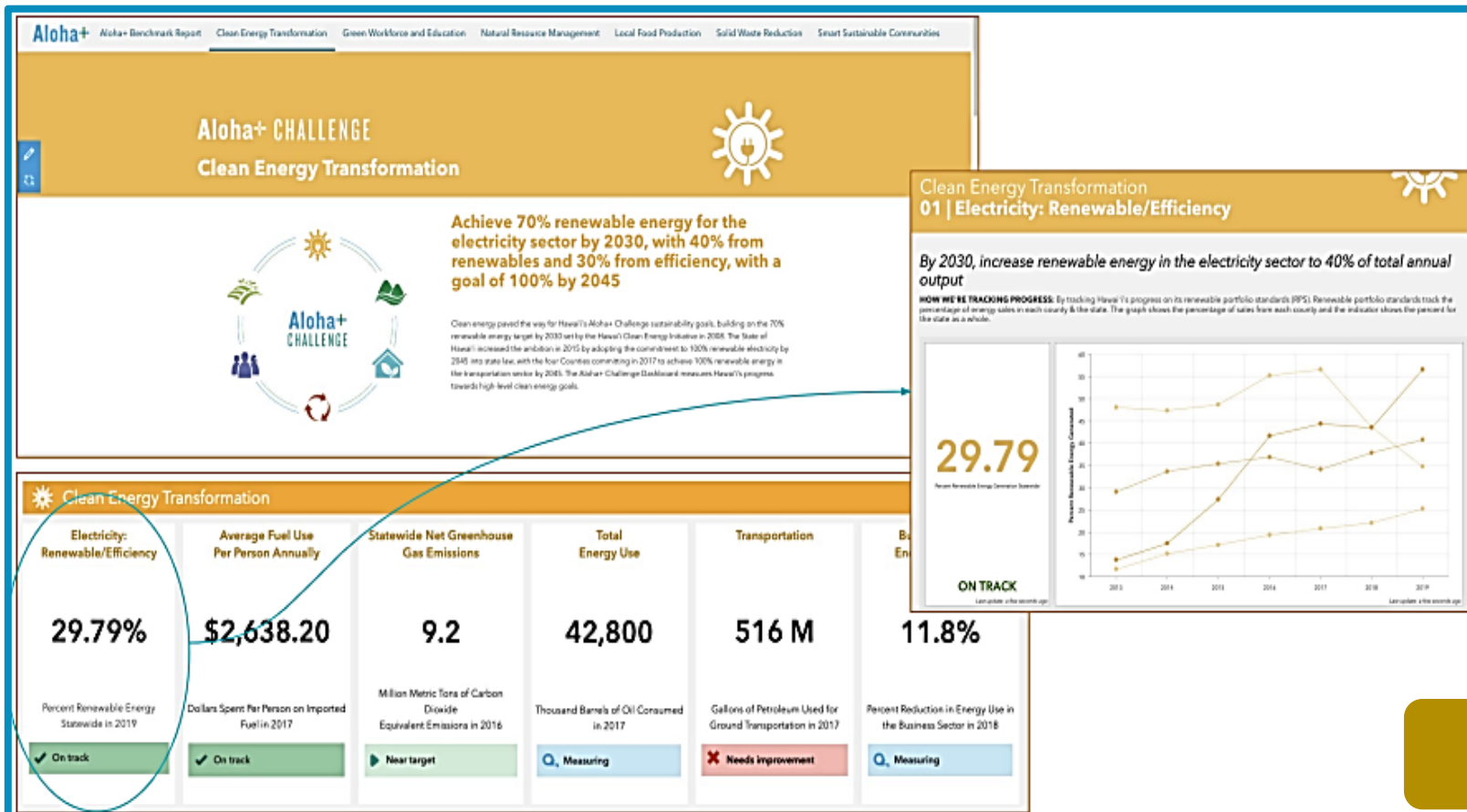
The UN's 17 SDGs

Clean Energy

Workforce Development and Education

Food consumption and waste

In-state initiatives and goals

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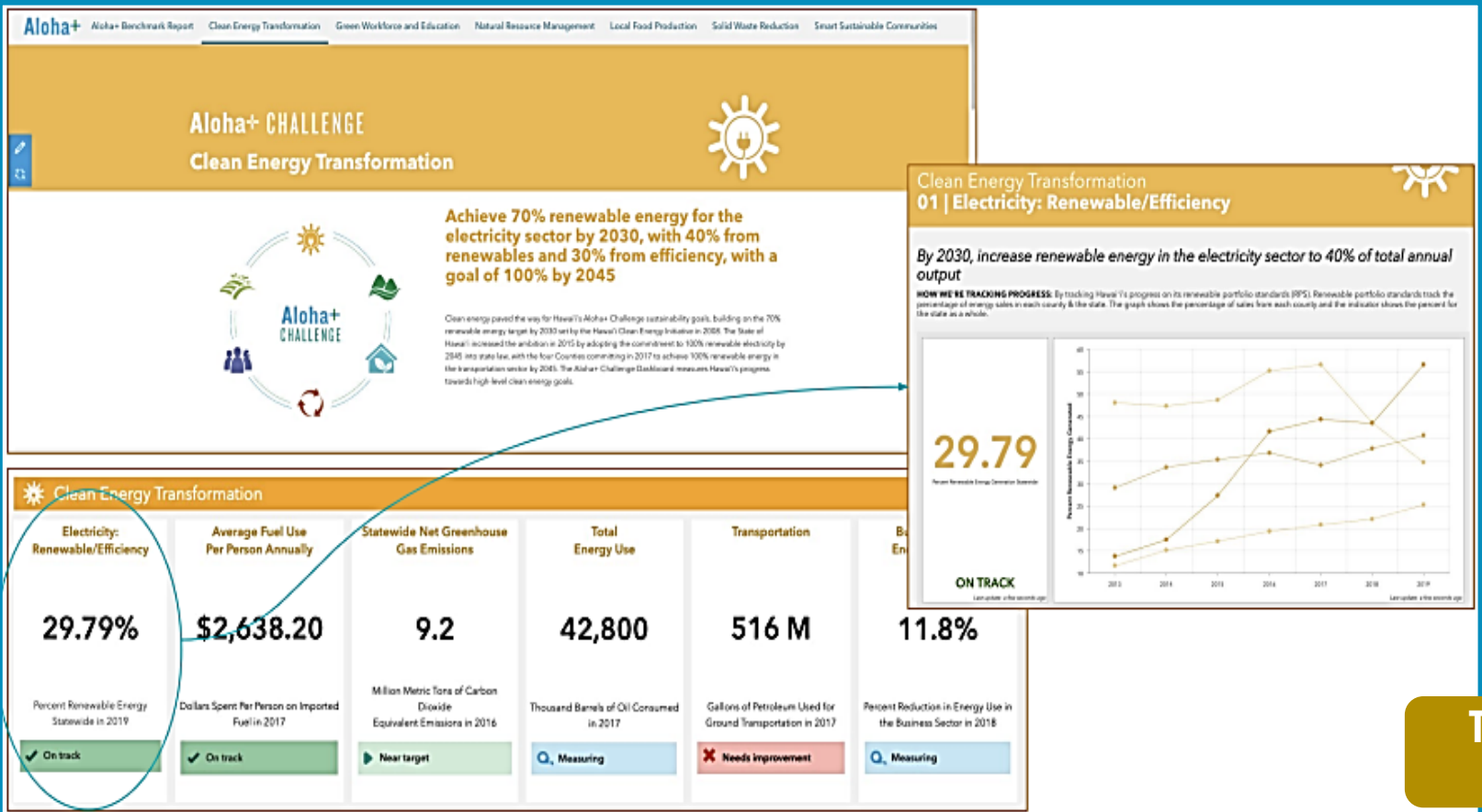
## Best Practices:

Aligns with goals outside the state – colloquial to outsiders

Wide variety or interactive displays

Explanations of the different metrics and goals



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# Dashboards Across the US: Massachusetts

The Massachusetts Executive Office of Energy and Environmental Affairs maintains the 'GHG Emissions and Mitigation Policies' page on Mass.gov. The page is not laid out as a dashboard but rather a long webpage that alternates between text explaining different policies, and graphed metrics that are associated.
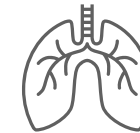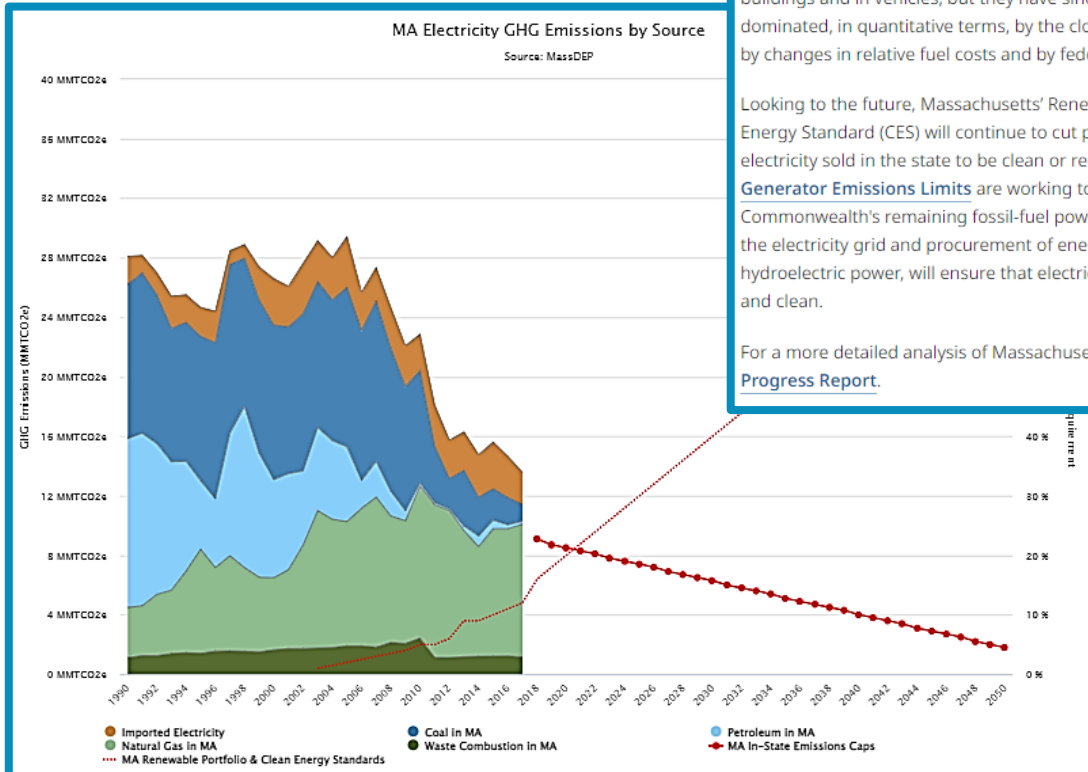


### Electricity Generation

In 1990, power sector emissions were comparable to emissions from combustion of fuels in buildings and in vehicles, but they have since fallen by nearly 50%. This progress has been dominated, in quantitative terms, by the closure of coal- and oil-fired power plants, driven both by changes in relative fuel costs and by federal and state regulations.

Looking to the future, Massachusetts' Renewable Energy Portfolio Standard (RPS) and Clean Energy Standard (CES) will continue to cut power sector emissions by requiring at least 80% of all electricity sold in the state to be clean or renewable by 2050. In addition, MassDEP's Electricity Generator Emissions Limits are working to gradually restrict the amount of carbon dioxide the Commonwealth's remaining fossil-fuel power plants are allowed to emit. Careful management of the electricity grid and procurement of energy resources, such as offshore wind and Canadian hydroelectric power, will ensure that electricity remains affordable and reliable, as well as safe and clean.

For a more detailed analysis of Massachusetts' progress, please review the GWSA 10-Year Progress Report.

## This Dashboard Tracks:

Total energy consumption/generation

Transportation

Buildings (energy use & policy impacts)

Air Quality

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## Best Practices:

Interactive graphs and data displays

Policy overviews and write-ups with data

Variety of data displayed – not focused on one sector

### MA Electricity GHG Emissions by Source
Source: MassDEP
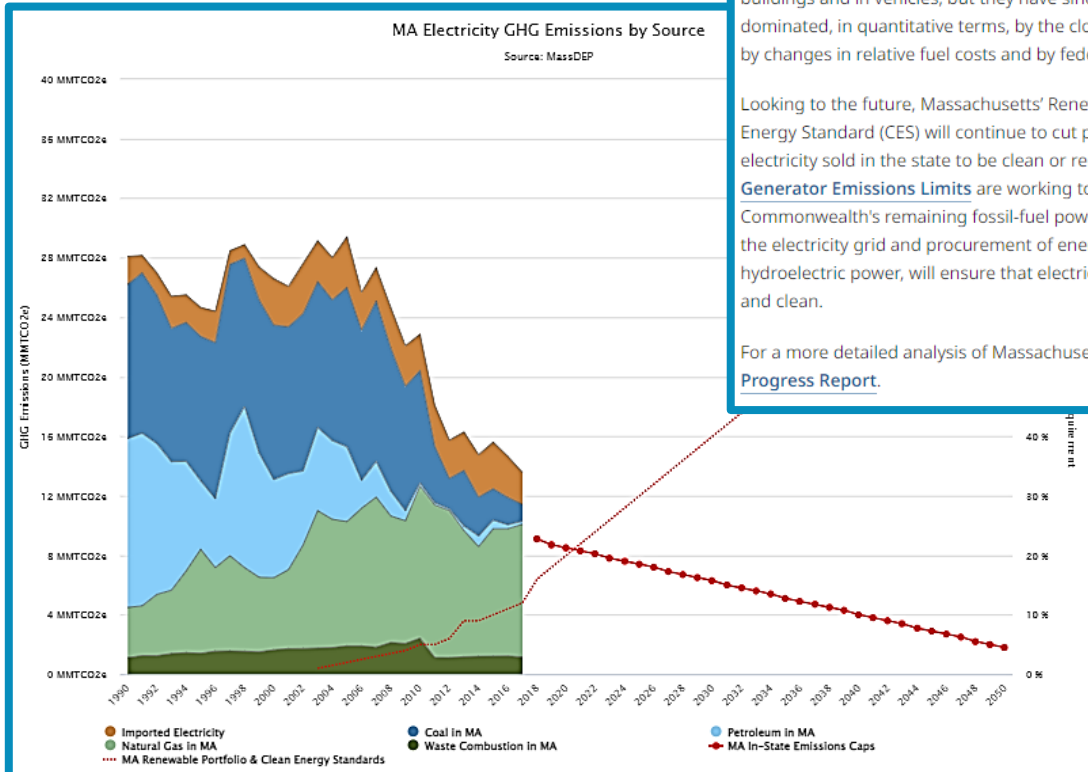
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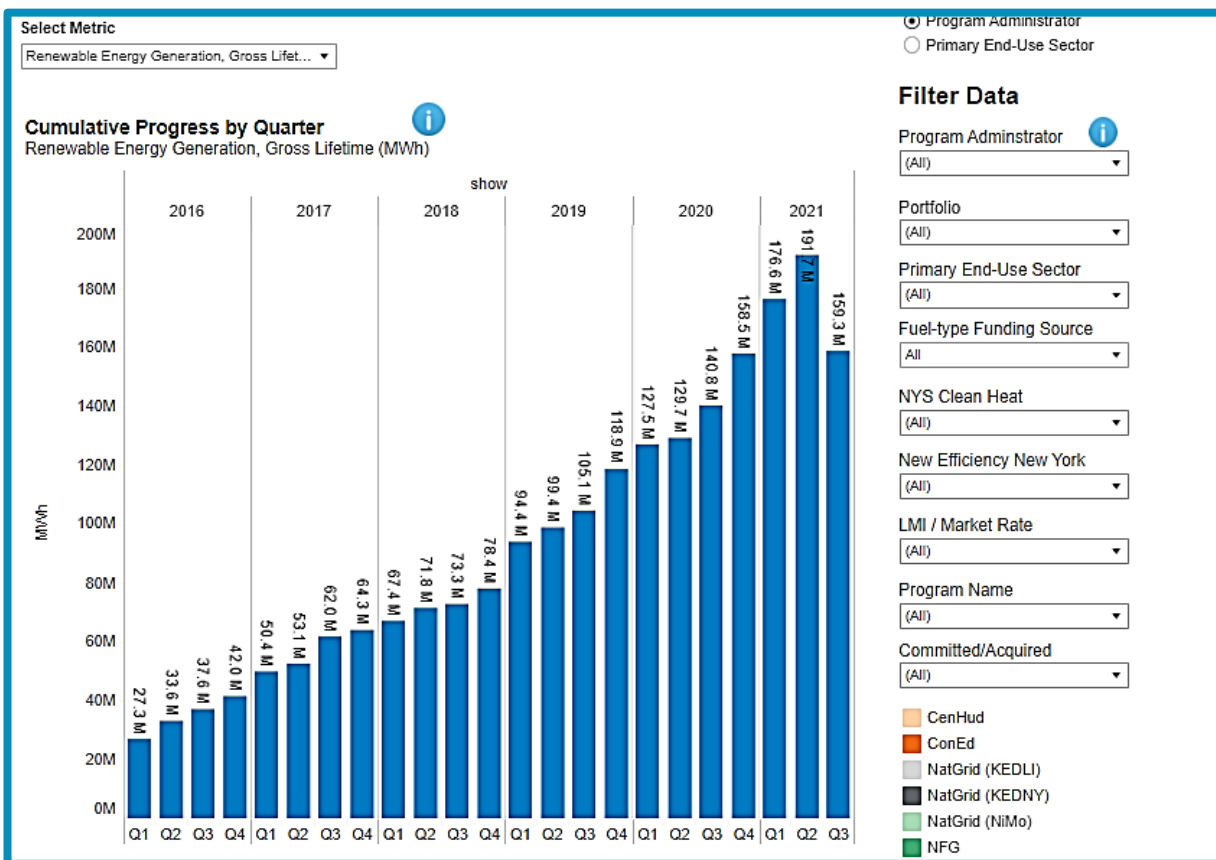
## This Dashboard Tracks:



Electricity usage, savings, and peak demands



Renewable Energy Generation



Fuel Usage

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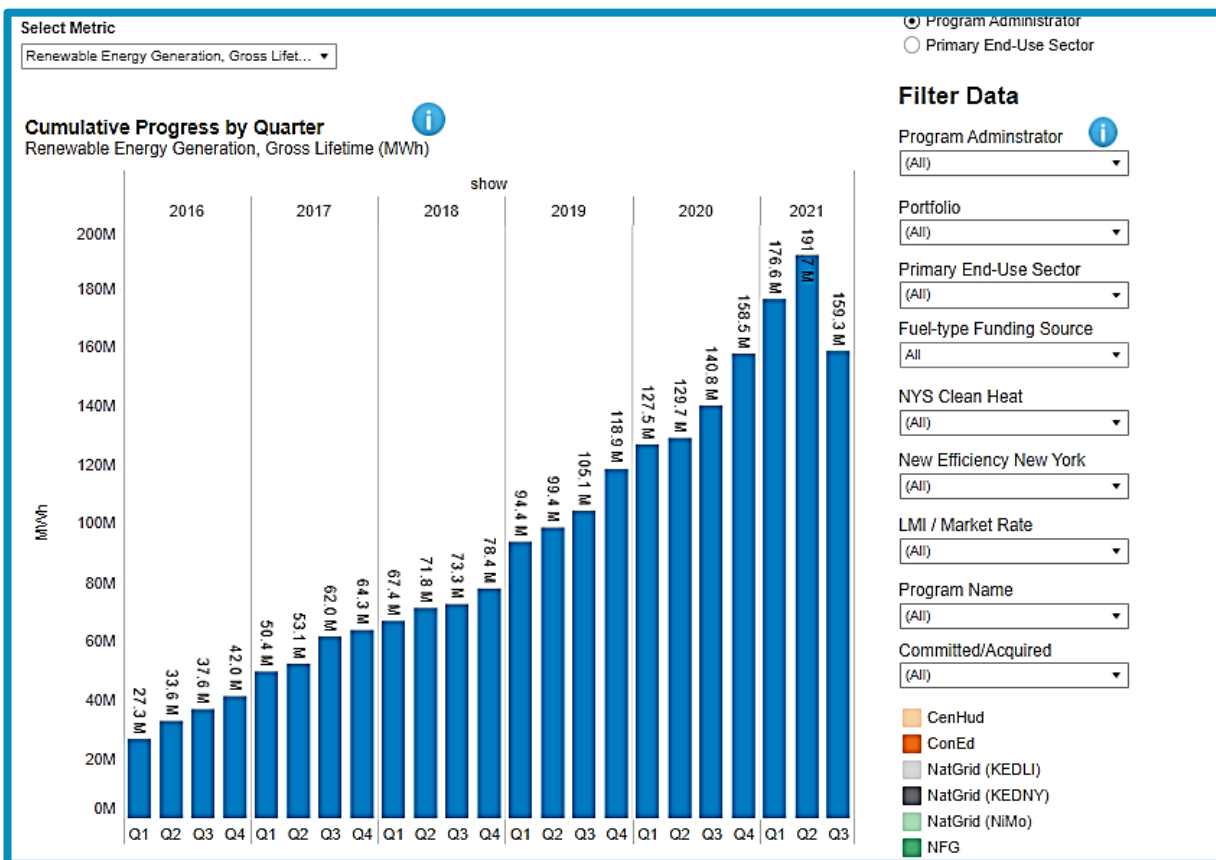
## Best Practices:

Quarterly Updating
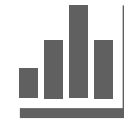
Easily viewable and manipulable data

Accompanying data available for download



To view climate dashboards, visit: Linktr.ee/RIEC4

# Dashboards Across the US: New Jersey

The New Jersey Department of Environmental Management (NJDEP), New Jersey Board of Public Utilities (NJBPU), and New Jersey Development Authority (NJEDA) maintains NJ's 'RGGI Dashboard'. Data and information related to climate investments being made by the NJDEP, NJBPU, and NJEDA utilizing funds obtained through quarterly auctions of the RGGI program are input into the dashboard through a GIS application. Data is collected from reporting agencies before being uploaded into GIS, their choice of dashboard development software. The dashboard is updated by NJDEP quarterly, taking a few days for each update.
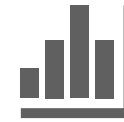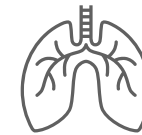
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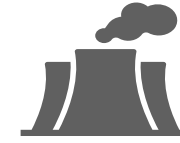
Showcases clean energy project funding

Inclusion of climate equity (mapping)

Easily viewable and manipulative data

Emissions avoided from clean energy investments
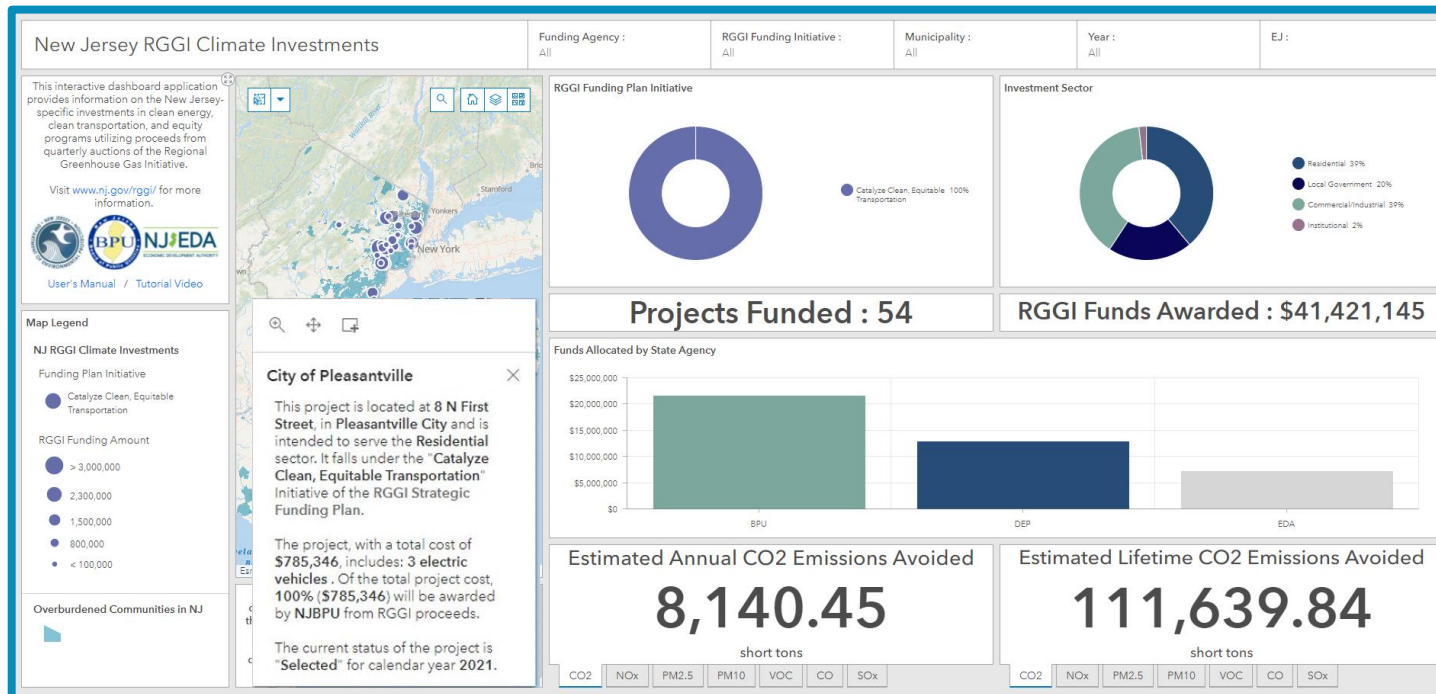


To view climate dashboards, visit: Linktr.ee/RIEC4

# Dashboards Across the US: Minnesota

The Minnesota Department of Transportation and Pollution Control Agency maintains MN's 'EV Dashboard'.



## Best Practices:

EV Charging Infrastructure

Easily viewable and manipulable data

Accompanying data available for download

ZEV & State Green Fleets

**To view climate dashboards, visit: Linktr.ee/RIEC4**

**Charging Deep Dive** 🔖 DEEP DIVE CHARGING — Detailed data on charging station deployment and charging use for charging stations funded through state programs.
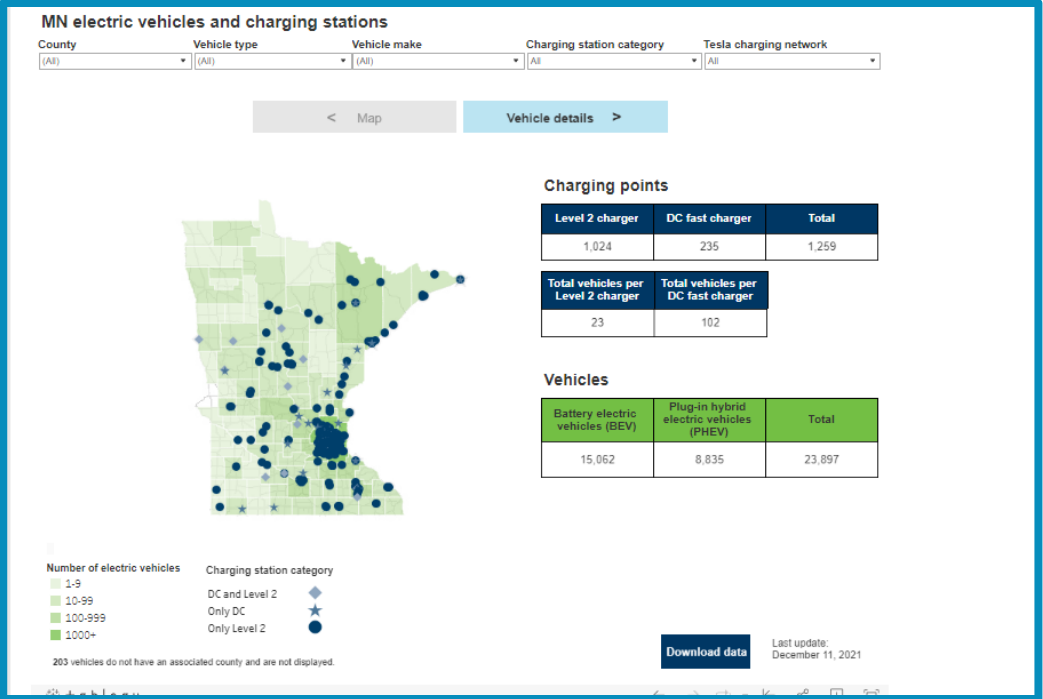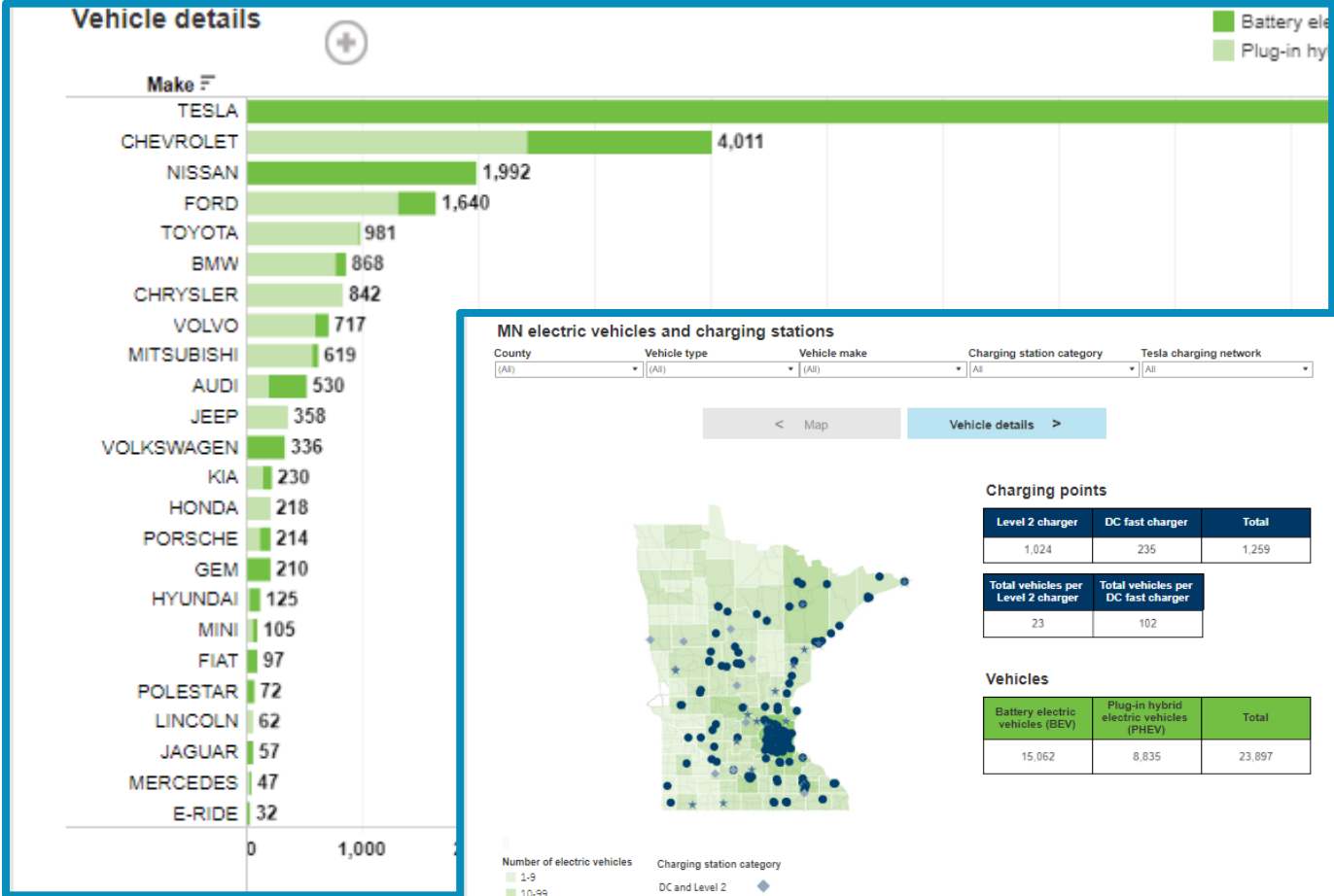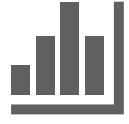
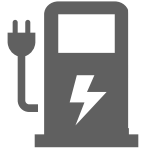| 1,416 Level 2 Locations | 3,310 Level 2 Ports | 0.59 Level 2 per 1k People | 224 DCFC Locations | 605 DCFC Ports | 0.11 DCFC per 1k People |

The EValuateCO dashboard is made possible through a collaboration between the Colorado Energy Office (CEO), Colorado Department of Revenue Division of Motor Vehicles (DMV), NIC Colorado and Atlas Public Policy. DMV, through NIC Colorado provides vehicle registration data, the single most important dataset in understanding evolving transportation markets. EVSE usage data is provided by the Charge Ahead Colorado program.
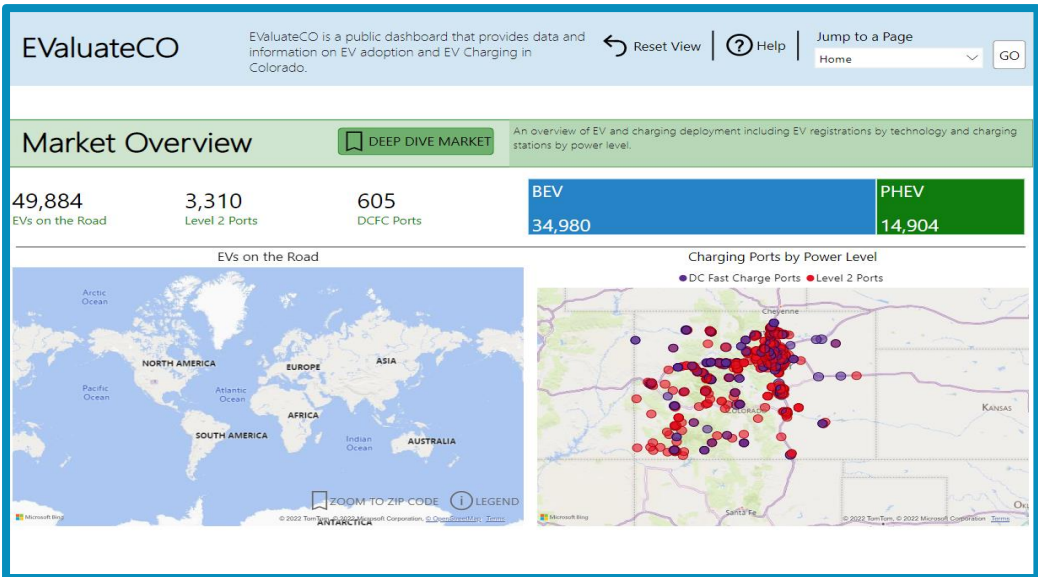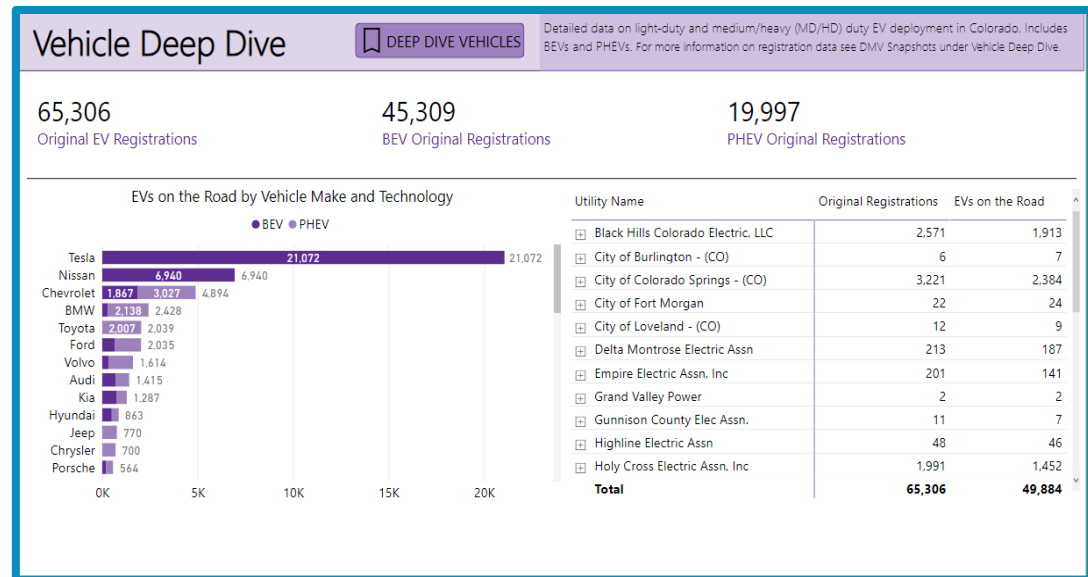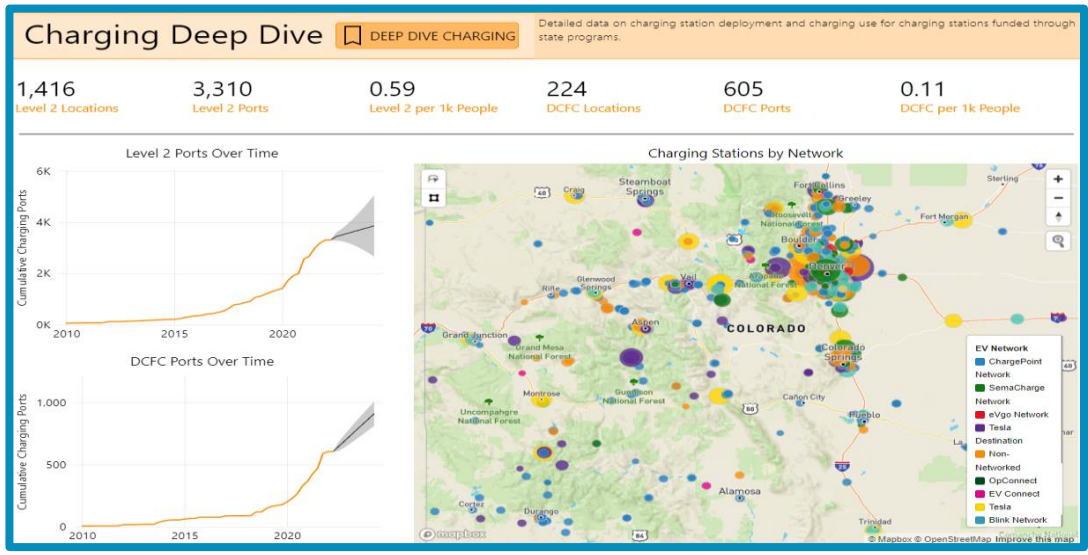
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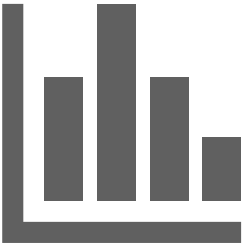
Easily viewable and manipulative data

EV Charging Infrastructure

**Vehicle Deep Dive** 🔖 DEEP DIVE VEHICLES — Detailed data on light-duty and medium/heavy (MD/HD) duty EV deployment in Colorado. Includes BEVs and PHEVs. For more information on registration data see DMV Snapshots under Vehicle Deep Dive.

| 65,306 Original EV Registrations | 45,309 BEV Original Registrations | 19,997 PHEV Original Registrations |

EVs on the Road by Vehicle Make and Technology

| Make | Value |
| --- | --- |
| Tesla | 21,072 |
| Nissan | 6,940 |
| Chevrolet | 1,867 / 3,027 (4,894) |
| BMW | 2,138 (2,428) |
| Toyota | 2,007 (2,039) |
| Ford | 2,035 |
| Volvo | 1,614 |
| Audi | 1,415 |
| Kia | 1,287 |
| Hyundai | 863 |
| Jeep | 770 |
| Chrysler | 700 |
| Porsche | 564 |

| Utility Name | Original Registrations | EVs on the Road |
| --- | --- | --- |
| Black Hills Colorado Electric, LLC | 2,571 | 1,913 |
| City of Burlington - (CO) | 6 | 7 |
| City of Colorado Springs - (CO) | 3,221 | 2,384 |
| City of Fort Morgan | 22 | 24 |
| City of Loveland - (CO) | 12 | 9 |
| Delta Montrose Electric Assn | 213 | 187 |
| Empire Electric Assn, Inc | 201 | 141 |
| Grand Valley Power | 2 | 2 |
| Gunnison County Elec Assn. | 11 | 7 |
| Highline Electric Assn | 48 | 46 |
| Holy Cross Electric Assn, Inc | 1,991 | 1,452 |
| **Total** | **65,306** | **49,884** |

**To view climate dashboards, visit: Linktr.ee/RIEC4**

EValuateCO — EValuateCO is a public dashboard that provides data and information on EV adoption and EV Charging in Colorado. | Reset View | Help | Jump to a Page: Home | GO

**Market Overview** 🔖 DEEP DIVE MARKET — An overview of EV and charging deployment including EV registrations by technology and charging stations by power level.

| 49,884 EVs on the Road | 3,310 Level 2 Ports | 605 DCFC Ports | BEV 34,980 | PHEV 14,904 |

EVs on the Road

Charging Ports by Power Level
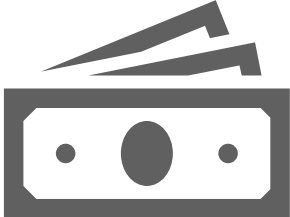
# Climate Dashboards across Different States

## What are best practices from different dashboards?

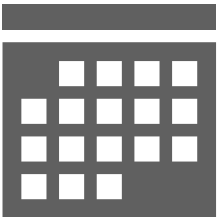Manipulable/interactive data accompanied by explanations

Easily viewable and understandable trends
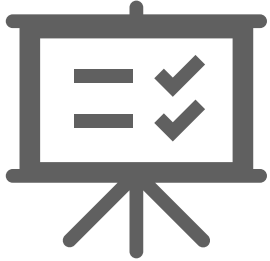
Inexpensive interface programs

Inclusion of Climate Equity (mapping and criteria)

Quarterly updating

Public feedback on the website (for clarification or inquiries)

Align dashboard metrics with data that is already collected

**To View RI's Current Climate Snapshot, visit:**
www.climatechange.ri.gov/climatesnapshot

**To view climate dashboards from other states, visit:**
Linktr.ee/RIEC4

# Thank You!

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