PPS DECARBONIZATION ROADMAP

AMERESCO
Green • Clean • Sustainable

Oh
planning+design,
architecture

PPS

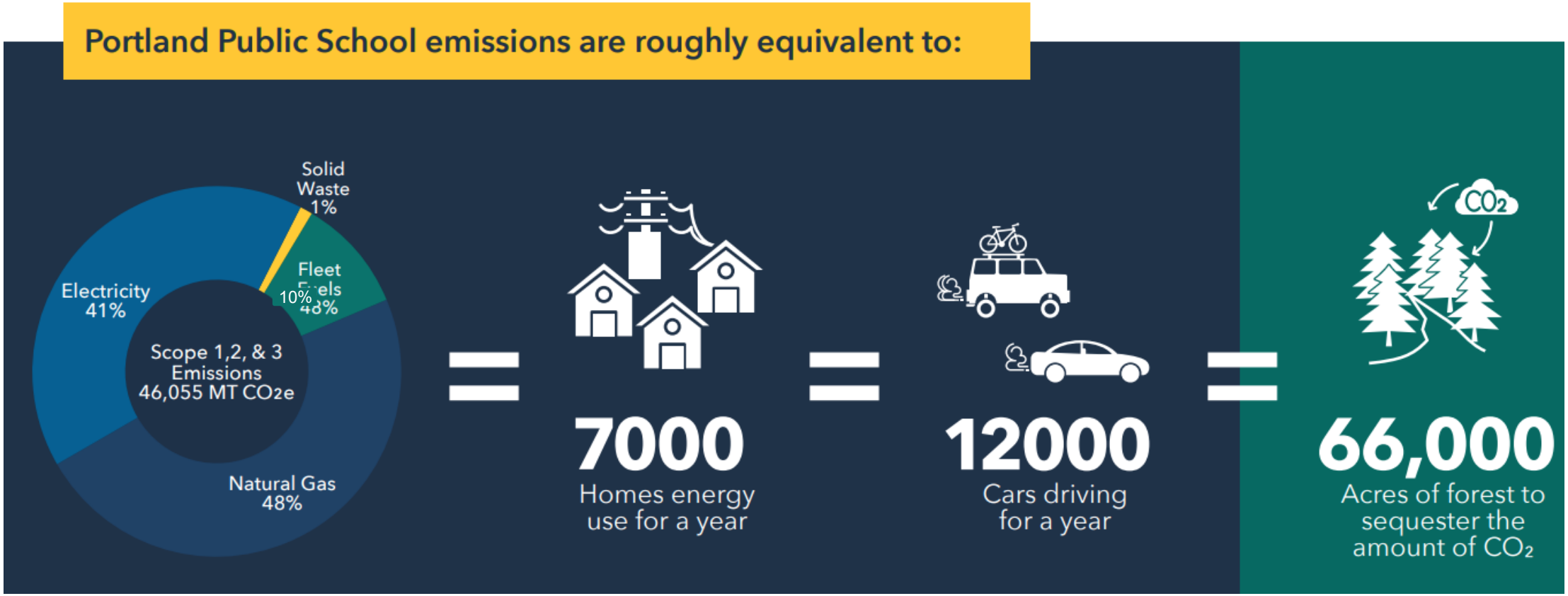
PAE

nbi new buildings institute

Agenda

1. Project Scope Quick Overview
2. Review Roadmap Development & Engagement Process
3. Project Prioritization Approach
4. Roadmap Scenarios
5. Implementing the Roadmap and Next Steps

Call for Climate Action



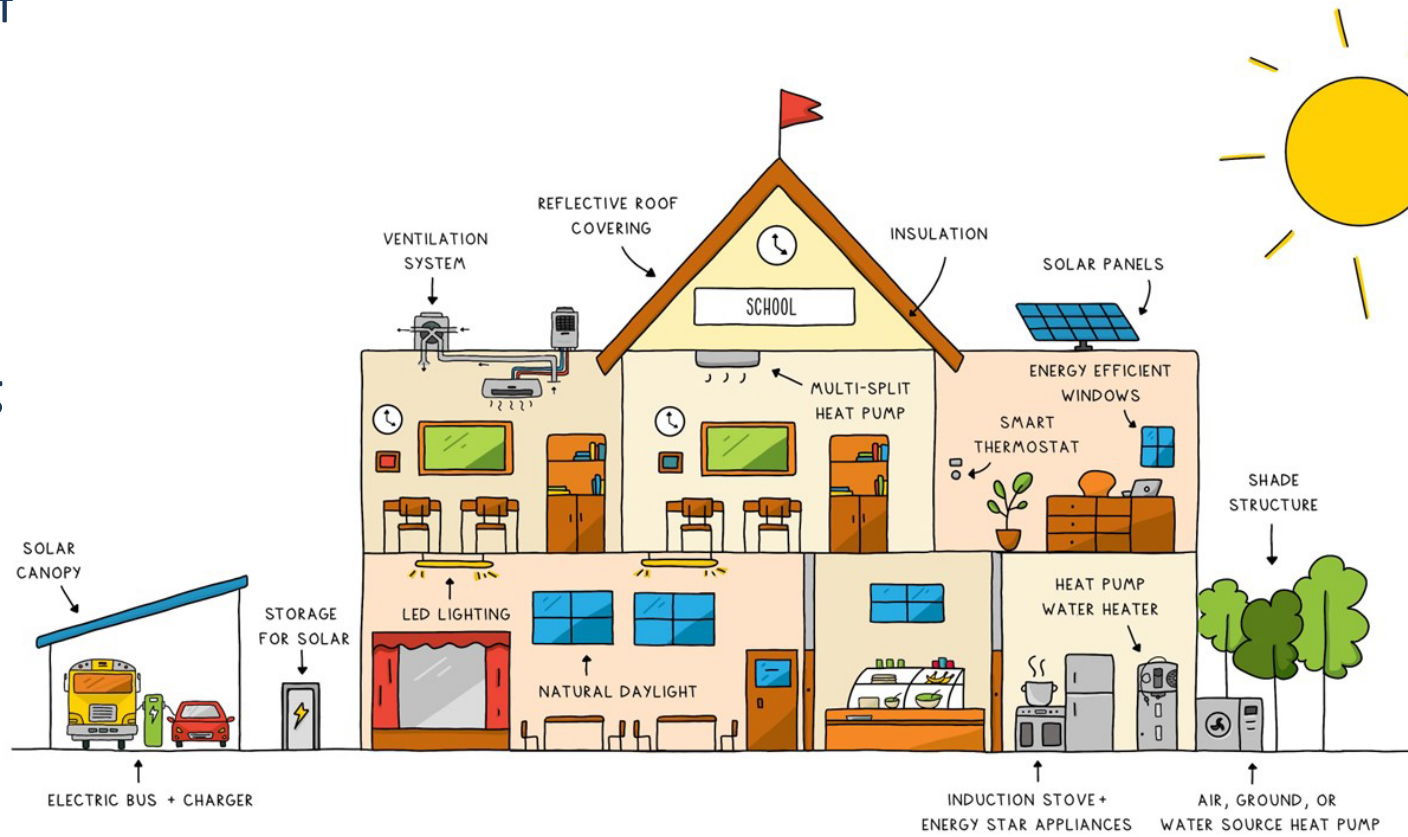
PPS Decarb Roadmap Scope

To define a set of actions that meet the goals of existing policies and standards to achieve zero carbon emissions and create efficient and resilient spaces with improved Indoor Environmental Quality (IEQ).

Decarbonizing the district will **improve building IEQ and comfort**, **resiliency**, and **student learning outcomes** while **reducing our carbon footprint and environmental impact**.

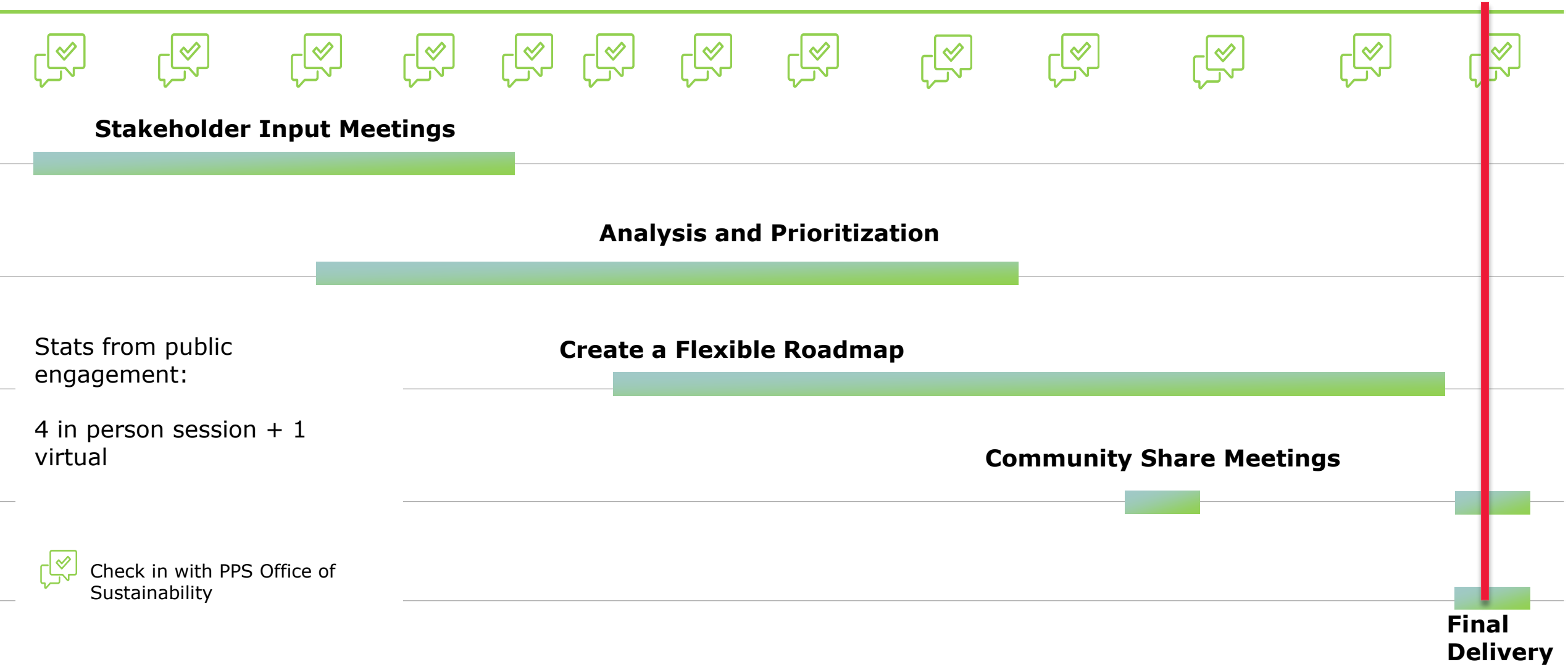
Note! The roadmap…

- **Is not** a set of design standards
- **Is not** a new policy
- Is focused on **buildings**



PPS Roadmap Development

Timeline


FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
Stakeholder Input Meetings
Analysis and Prioritization
Stats from public engagement:
4 in person session + 1 virtual
Create a Flexible Roadmap
Community Share Meetings
Check in with PPS Office of Sustainability
Final Delivery

Stakeholder Engagement

External Stakeholder Engagement

Engagement attendance:

- Online survey (45 responses)
- 4 in-person meetings and 1 virtual meeting (43 total participants)
- Classroom engagement
- Presented at All City PTA Meeting

Outreach process:

- Flyer and email sent out district wide
- Partners conducted additional outreach
- Flyer translated into 5 languages

A summary of the engagement efforts can be found on pps.net/energy

External Stakeholder Priorities

1. ***Implementation Priority:*** *In what order should PPS implement GHG emissions reductions measures across schools and admin buildings to provide the best chance of meeting PPS emissions goals, given financial, industry, and facility constraints, while considering historic inequities in the distribution of resources across PPS?*

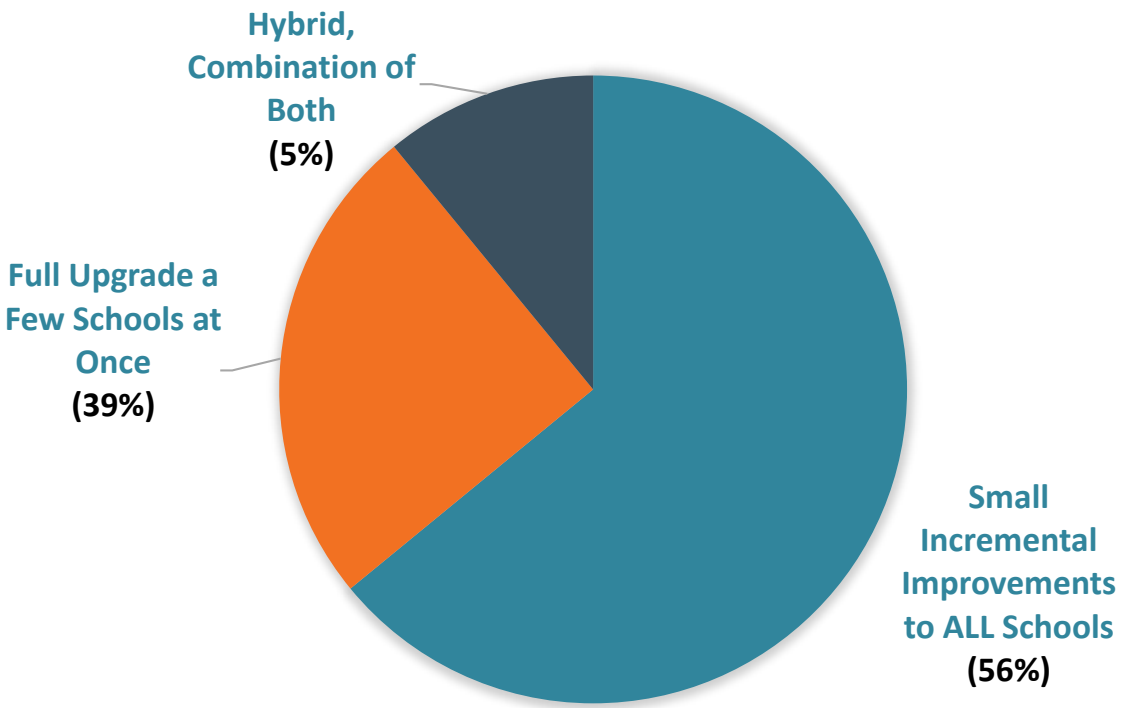
- Small Incremental Improvements to All Schools
- Completely Upgrade a Few Schools at Once
- Hybrid, Combination of Both

2. ***Project Priority:*** *What are our community members biggest priorities related to project level construction and decarbonization?*

- Reduce operating cost & maintenance
- Energy resiliency *(Solar PV, batteries)*
- Thermal comfort *(AC, insulation, windows, air sealing)*
- Improve Indoor Air Quality *(filtration, ventilation, electric cooking)*
- Visual Comfort *(lighting, daylighting, access to views)*
- Improved Outdoor Environment *(greenspace, reduced heat island)*

Stakeholder Outcomes

Implementation Priorities

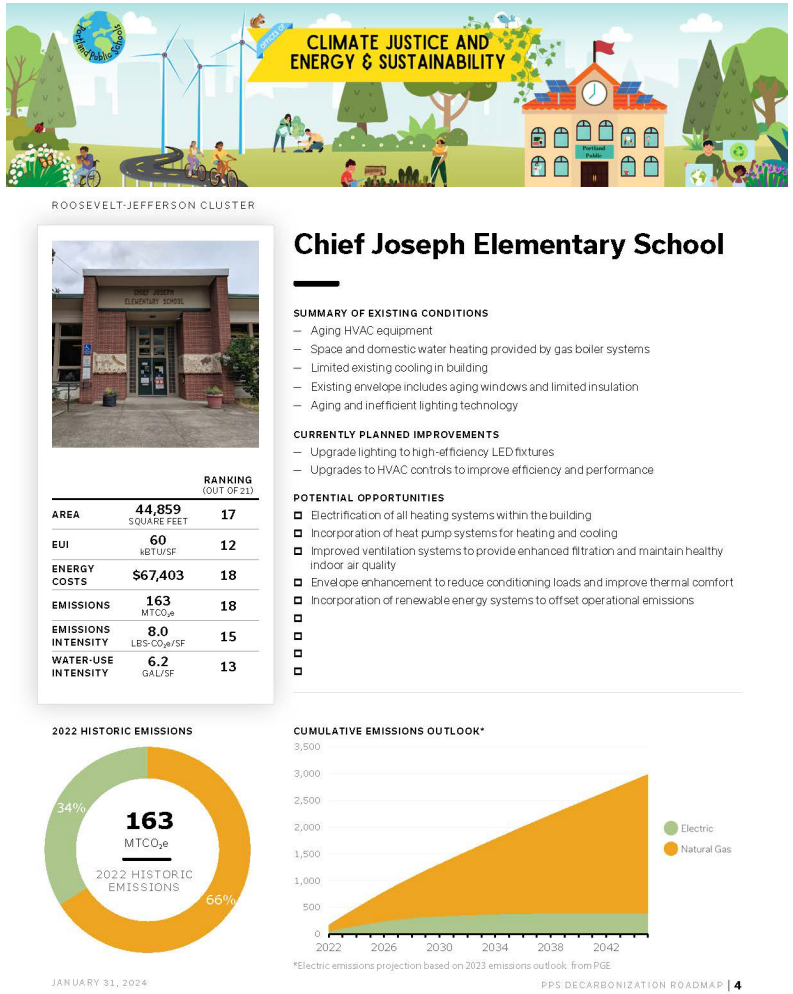


Project Priorities

1. Improve thermal comfort
2. Reduce energy & carbon emissions
3. Improve Indoor air quality
4. Add energy resilience
5. Reduce operating cost & maintenance
6. Improve outdoor environment
7. Improve visual comfort

External Engagement Lessons Learned

- The timing of the teachers strike impacted our ability to do a stronger outreach approach.
- More collaboration with local CBOs would have been beneficial but difficult with compressed timeline.
- In person events were not as well attended as we would have hoped.
- Virtual engagement was the highest attendance.
- Decarb is a broad term and means different things to different stakeholders. Additional education and support around scope of roadmap may be needed.
- Frequently voiced concerns included: indoor air quality, equity, costs, and deferred maintenance/competing priorities.



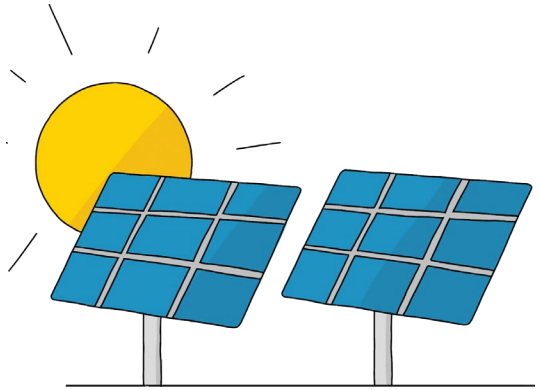
Internal Stakeholder Engagement

Offices in attendance:

- Chief Operating Officer
- Office of School Modernization
- Planning and Real Estate Management
- Maintenance Services
- Climate Justice
- Energy and Sustainability
- Design & Planning

Engagement Process

- 2 full group meetings for feedback (with PAE & team)
- Frequent small group or internal meetings (Energy & Sustainability and others)



Roadmap Project Prioritization

Prioritization Scoring Data Sources

Prioritization Category

Data Source

- Utility Data
- Prior Audits
- Facility Condition Assessment Data
- Workorder data
- Airflow reports
- Additional Facilities feedback
- Priority school lists (TSI/CSI*)
- Multnomah County heat vulnerability data
- Justice 40 data
- Stakeholder feedback

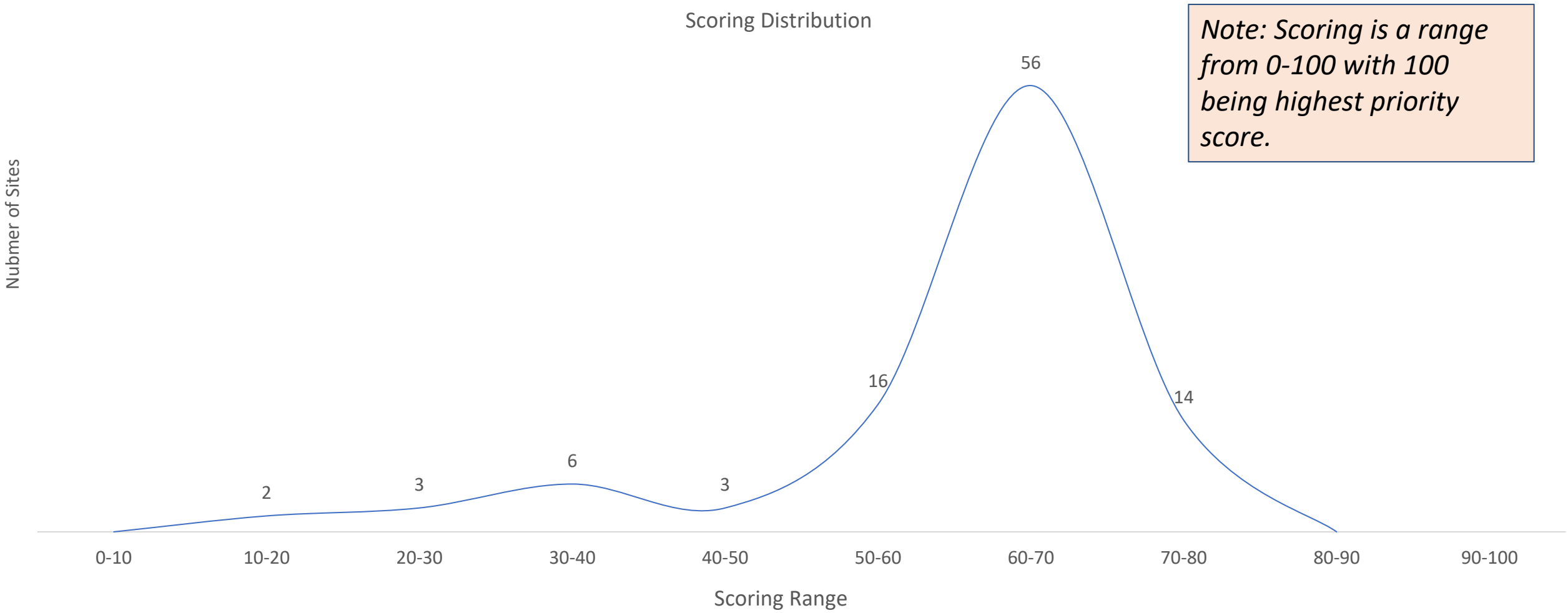
Category	Icon
General	
Facility Condition Assessment (FCA)	
Indoor Environmental Quality (IEQ)	
Equity	

Category	Max Category Score	Weighting in Overall Score
General	35	10%
FCA	80	45%
IEQ	30	30%
Equity	45	15%

*Comprehensive Support and Improvement (CSI) and Targete Support and Improvement (TSI) are school improvement programs that identify schools in need of additional support.

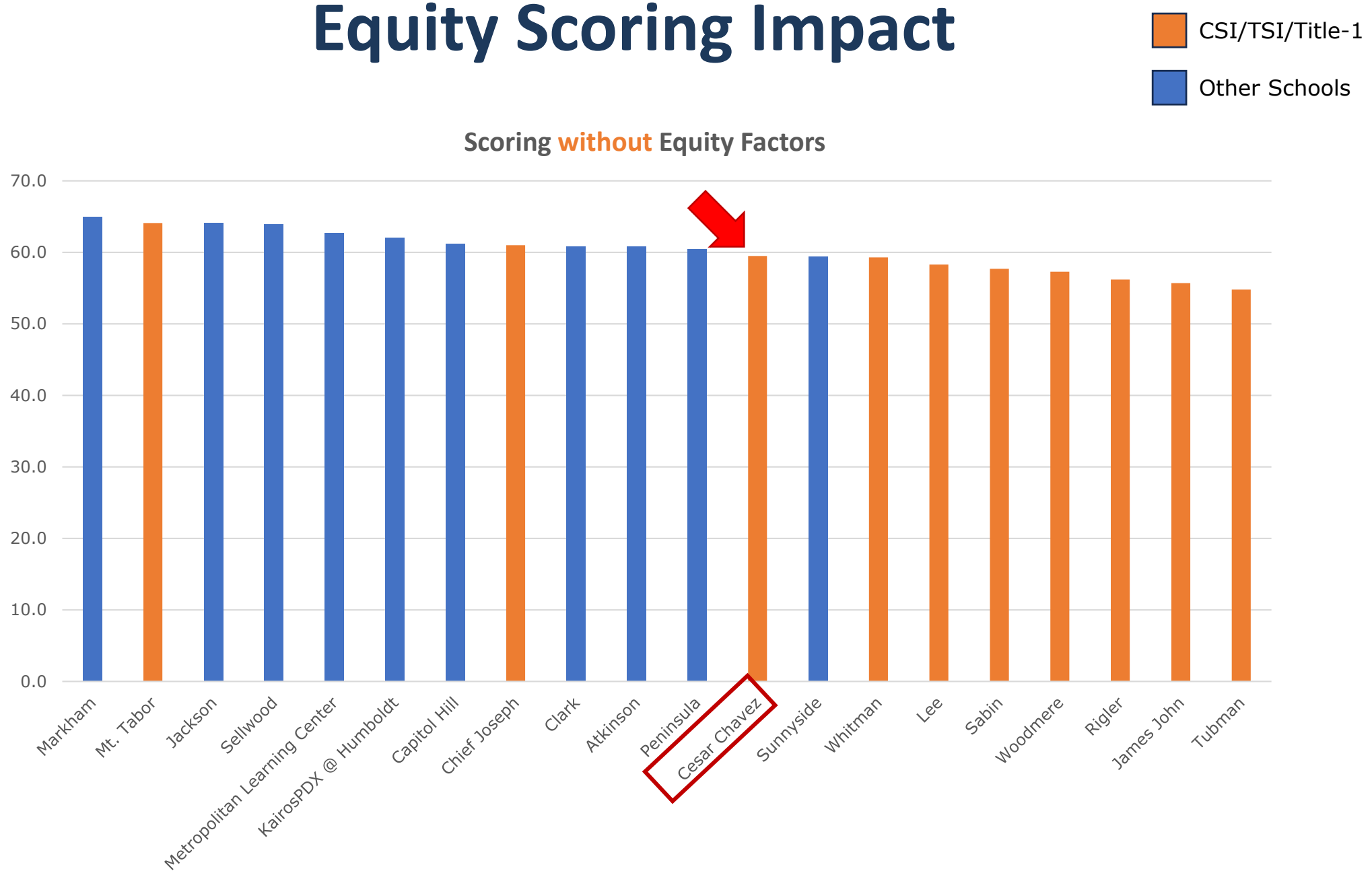
District-wide Scoring

- Majority of sites have scored in the above average (60+) range indicating significant need for upgrades
- With the concentrated spread, equity scoring acts as a key differentiator in the prioritization

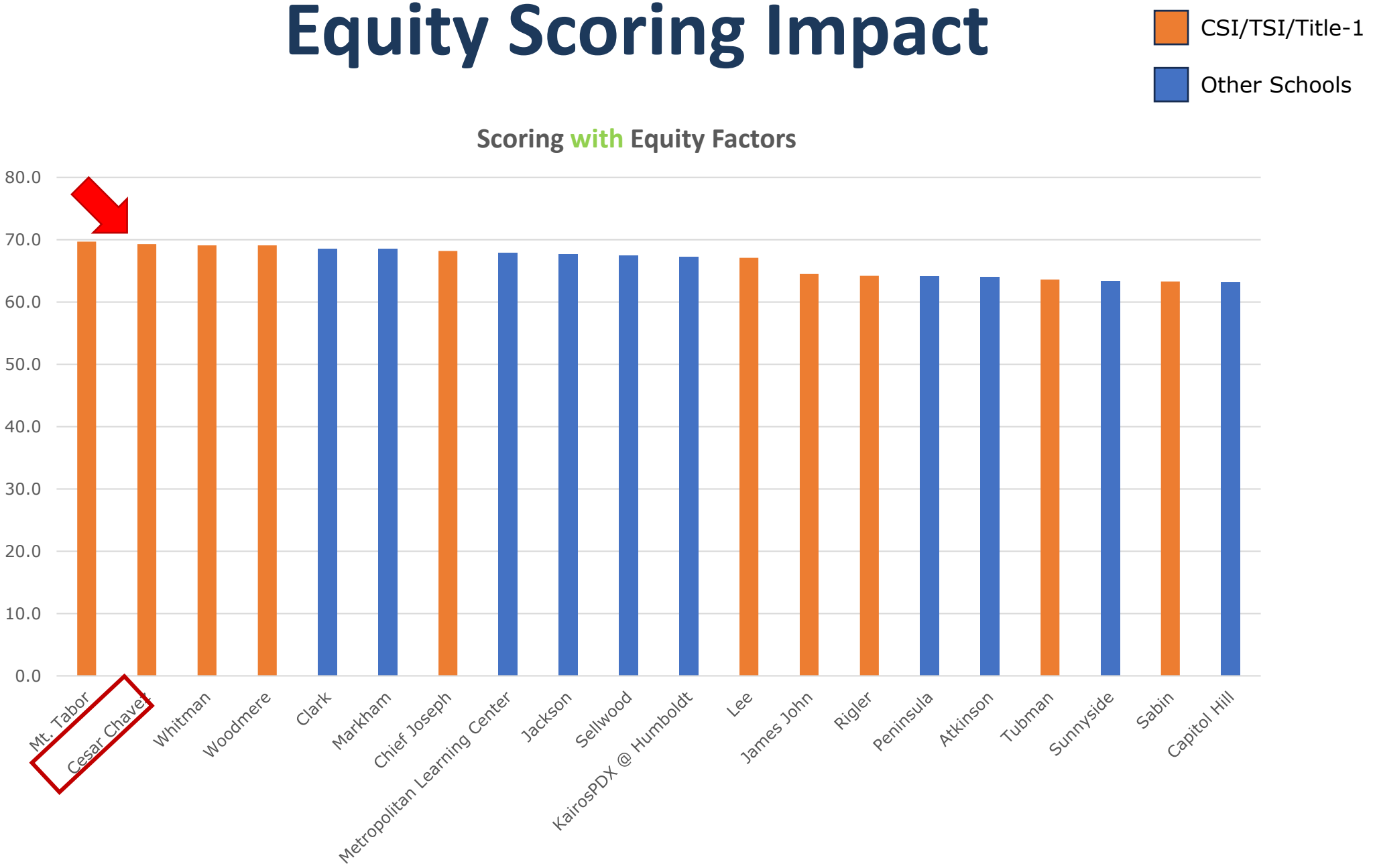


Note: Scoring is a range from 0-100 with 100 being highest priority score.

Equity Scoring Impact



Equity Scoring Impact



Roadmap Scenarios

Level Setting the Roadmap

The Roadmap is a forecast of energy/emissions impacts from assigned energy efficiency, electrification, and onsite generation measures

This is done in a large spreadsheet, that shows costs and the prioritization scores. Selections can be made at the granular level and be rolled into scenarios to compare packages of options.

	plementation Cost Estimate	$29.6M	$137.5M	$75.1M	$25.6M	$208.2M	$82.7M	$250.8M	$204.9M	$217.1M	$226.4M	$208.9M	$224.9M	$221.5M	$213.9M	$305.6M	$205.0M	$201.1M		GREEN FILL INDICATES YEAR OF IMPLEMENTATION			
Display Name	ECM	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	General Score	Energy Score	Health Score	Equity Score	Overall Score
Roseway Heights	Air Sealing																		9.1	31.5	25	8.7	74.3
Roseway Heights	Controls upgrade/RCx																		9.1	31.5	25	8.7	74.3
Roseway Heights	Cooking Electrification																		9.1	31.5	25	8.7	74.3
Roseway Heights	Cooling Addition																		9.1	31.5	25	8.7	74.3
Roseway Heights	Filtration Upgrade																		9.1	31.5	25	8.7	74.3
Roseway Heights	Heat Recovery Ventilation																		9.1	31.5	25	8.7	74.3
Roseway Heights	Heating Electrification - Air-Source																		9.1	31.5	25	8.7	74.3
Roseway Heights	Lighting Upgrade																		9.1	31.5	25	8.7	74.3
Roseway Heights	Roof Upgrade																		9.1	31.5	25	8.7	74.3
Roseway Heights	Wall Upgrade																		9.1	31.5	25	8.7	74.3
Roseway Heights	Water Heating Electrification - ER																		9.1	31.5	25	8.7	74.3
Roseway Heights	Water Heating Electrification - HP																		9.1	31.5	25	8.7	74.3
Roseway Heights	Window Upgrade																		9.1	31.5	25	8.7	74.3
Woodmere	Air Sealing																		4.9	30.4	27	11.7	74
Woodmere	Controls upgrade/RCx																		4.9	30.4	27	11.7	74
Woodmere	Cooking Electrification																		4.9	30.4	27	11.7	74
Woodmere	Cooling Addition																		4.9	30.4	27	11.7	74
Woodmere	Filtration Upgrade																		4.9	30.4	27	11.7	74
Woodmere	Heat Recovery Ventilation																		4.9	30.4	27	11.7	74
Woodmere	Heating Electrification - Air-Source																		4.9	30.4	27	11.7	74
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Woodmere	Roof Upgrade																		4.9	30.4	27	11.7	74
Woodmere	Wall Upgrade																		4.9	30.4	27	11.7	74
Woodmere	Water Heating Electrification - ER																		4.9	30.4	27	11.7	74
Woodmere	Water Heating Electrification - HP																		4.9	30.4	27	11.7	74
Woodmere	Window Upgrade																		4.9	30.4	27	11.7	74
Chief Joseph	Air Sealing																		5.1	34.9	26	8	74
Chief Joseph	Controls upgrade/RCx																		5.1	34.9	26	8	74
Chief Joseph	Cooking Electrification																		5.1	34.9	26	8	74
Chief Joseph	Cooling Addition																		5.1	34.9	26	8	74
Chief Joseph	Filtration Upgrade																		5.1	34.9	26	8	74
Chief Joseph	Heat Recovery Ventilation																		5.1	34.9	26	8	74
Chief Joseph	Heating Electrification - Air-Source																		5.1	34.9	26	8	74
Chief Joseph	Lighting Upgrade																		5.1	34.9	26	8	74
Chief Joseph	Roof Upgrade																		5.1	34.9	26	8	74
Chief Joseph	Wall Upgrade																		5.1	34.9	26	8	74
Chief Joseph	Water Heating Electrification - ER																		5.1	34.9	26	8	74
Chief Joseph	Water Heating Electrification - HP																		5.1	34.9	26	8	74
Chief Joseph	Window Upgrade																		5.1	34.9	26	8	74

What Each Scenario Means

Scenario-1 (By School)

- **Wholistic implementation** of projects site by site
- **Comprehensive decarbonization projects** are implemented across all sites

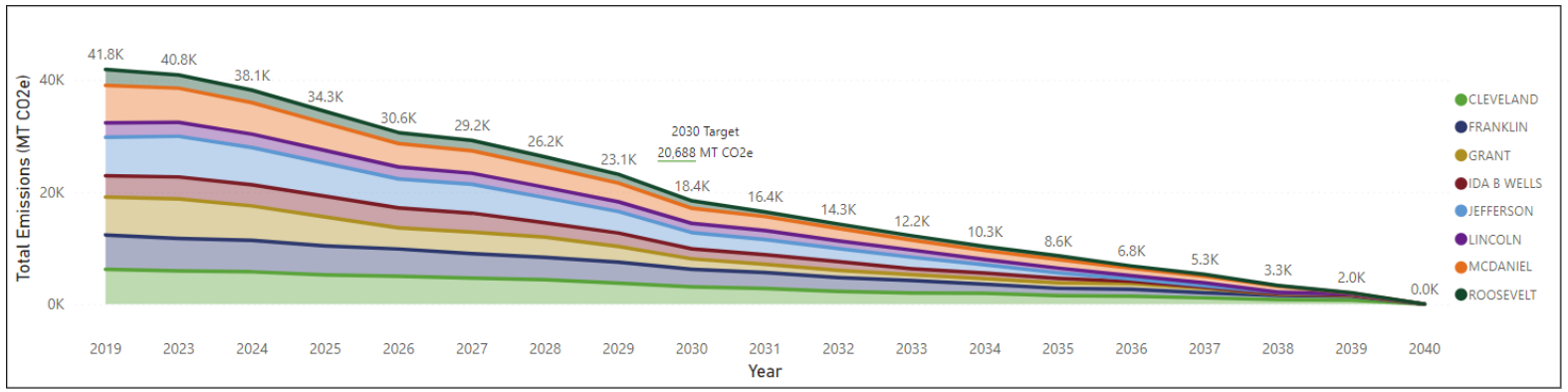
Scenario-2 (By Measure)

- **Distributed implementation of projects at many sites**
- Project implementation approach assumes **targeted decarbonization measures** are implemented across all sites

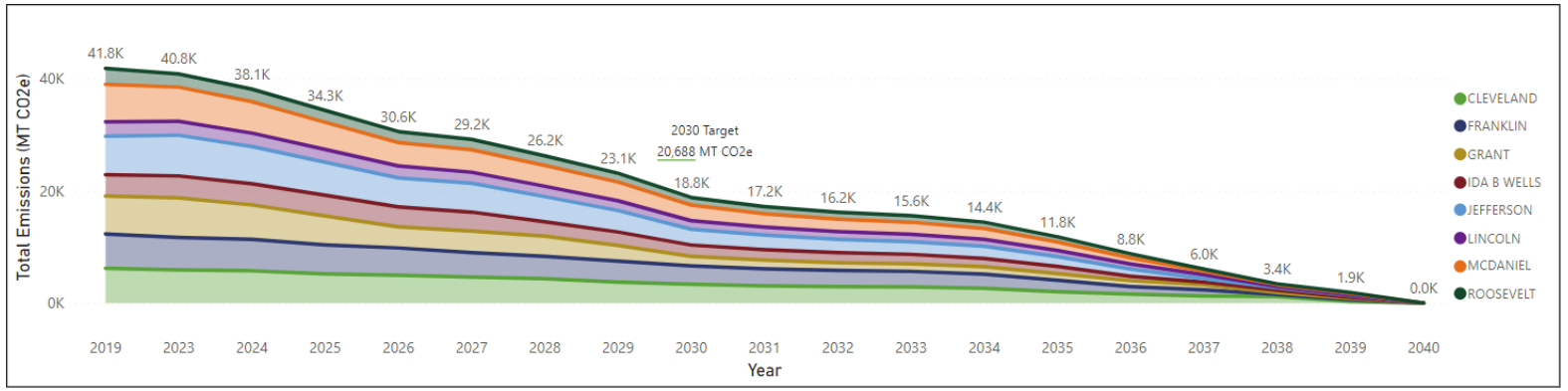
Scenario-3 (Planned only)

- Project implementation approach assumes **currently planned retrofit and high school modernization projects are completed**, **but no other investment in decarbonization is made** by the district.

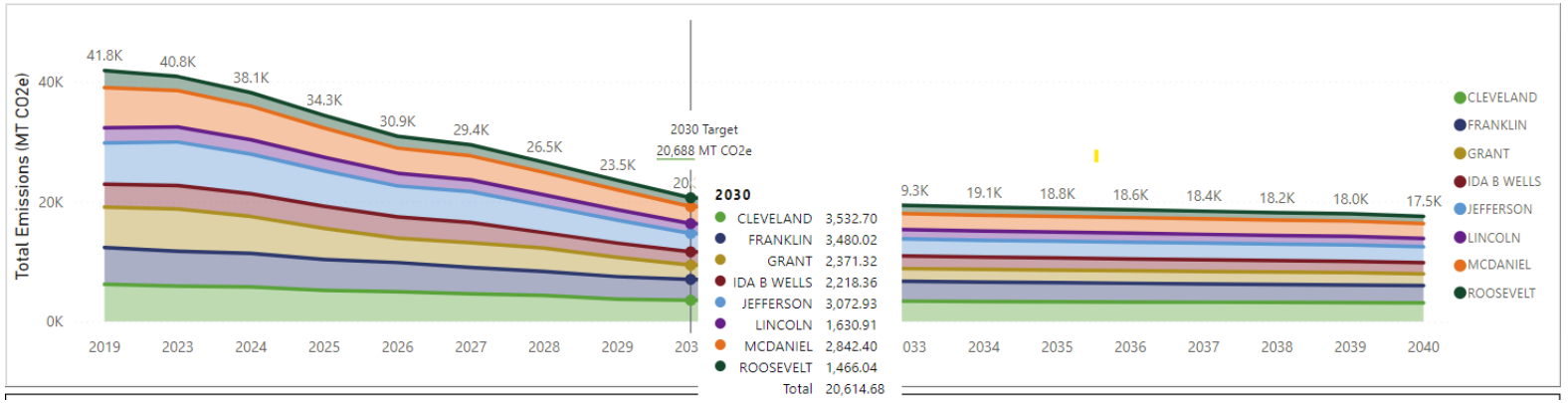
Scenario Comparisons – Total Emissions



Scenario-1 (By School)

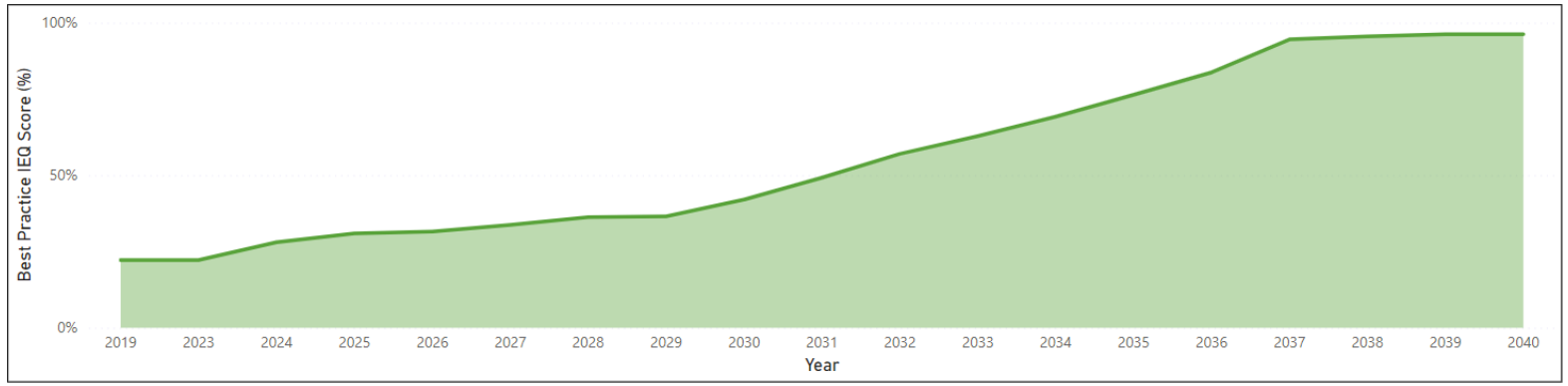


Scenario-2 (By Measure)

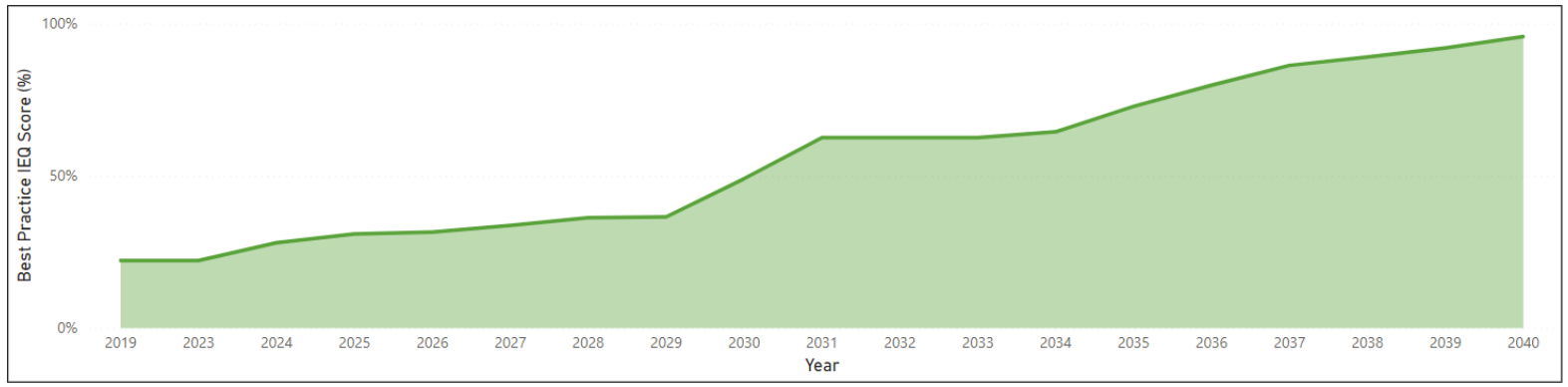


Scenario-3 (Planned only)

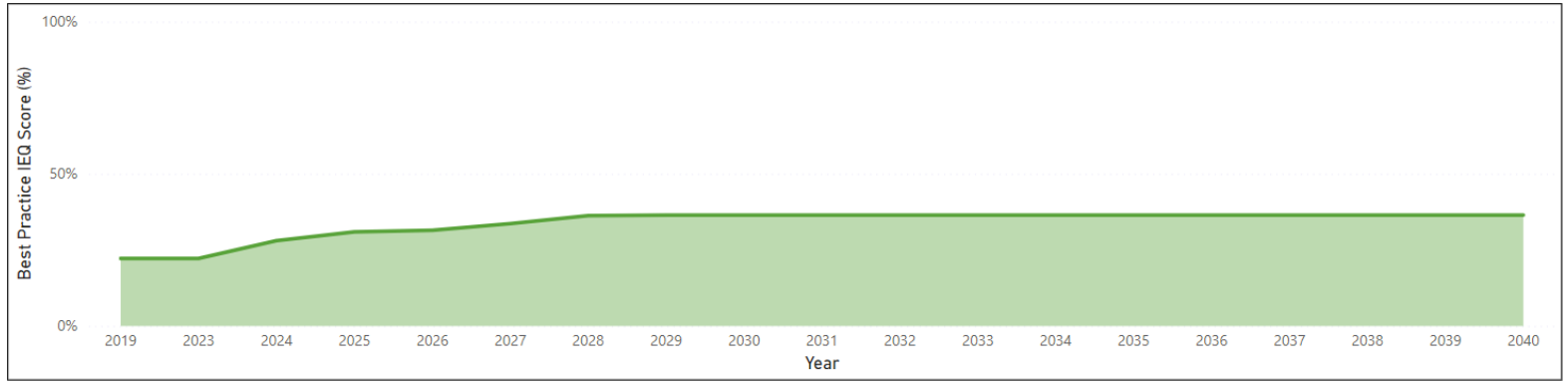
Scenario Comparisons – Best Practice Indoor Environmental Quality



Scenario-1 (By School)

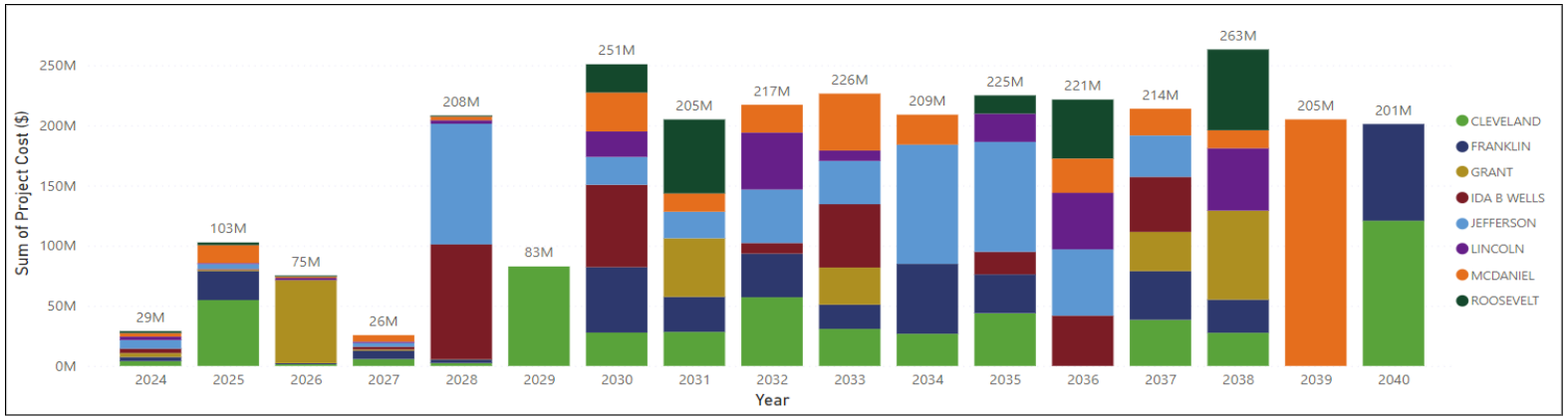


Scenario-2 (By Measure)



Scenario-3 (Planned only)

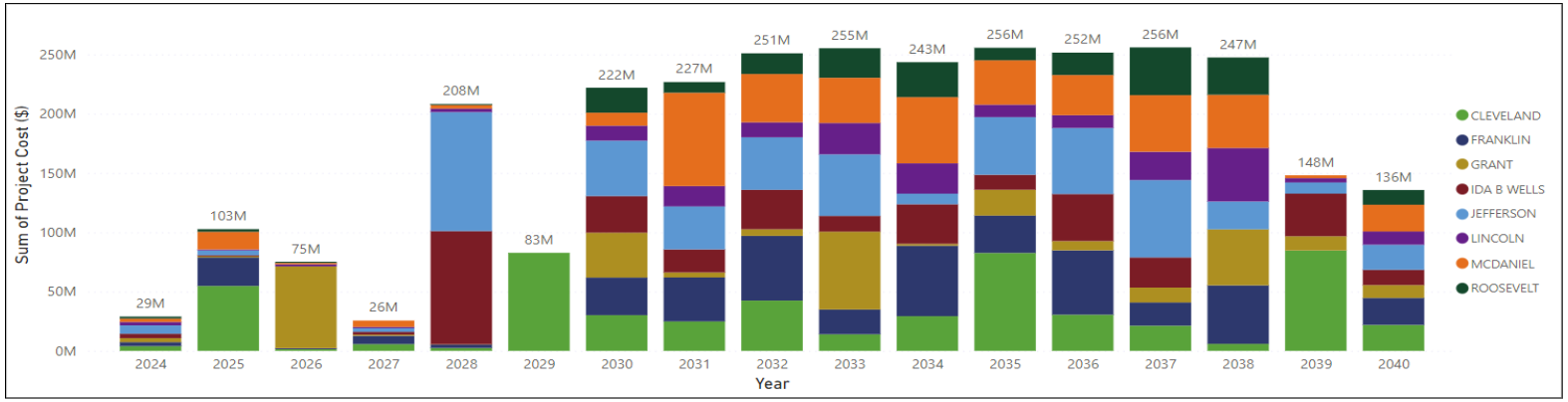
Scenario Comparisons – Sum of Project Costs*



Scenario-1 (By School)

The estimated total cost of implementation is

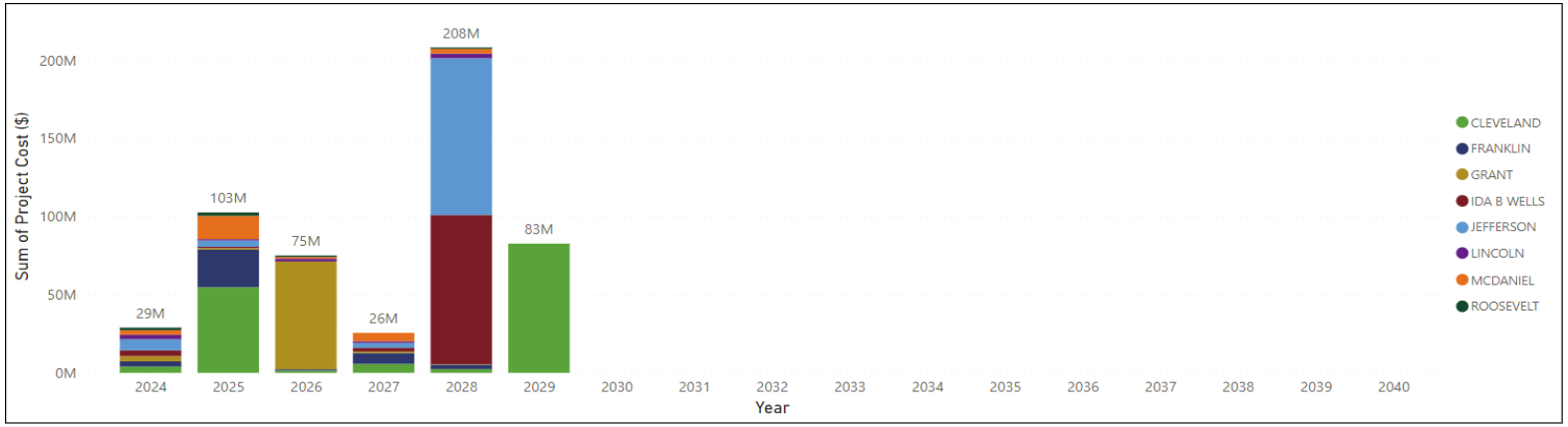
$2.96B



Scenario-2 (By Measure)

The estimated total cost of implementation is

$3.15B



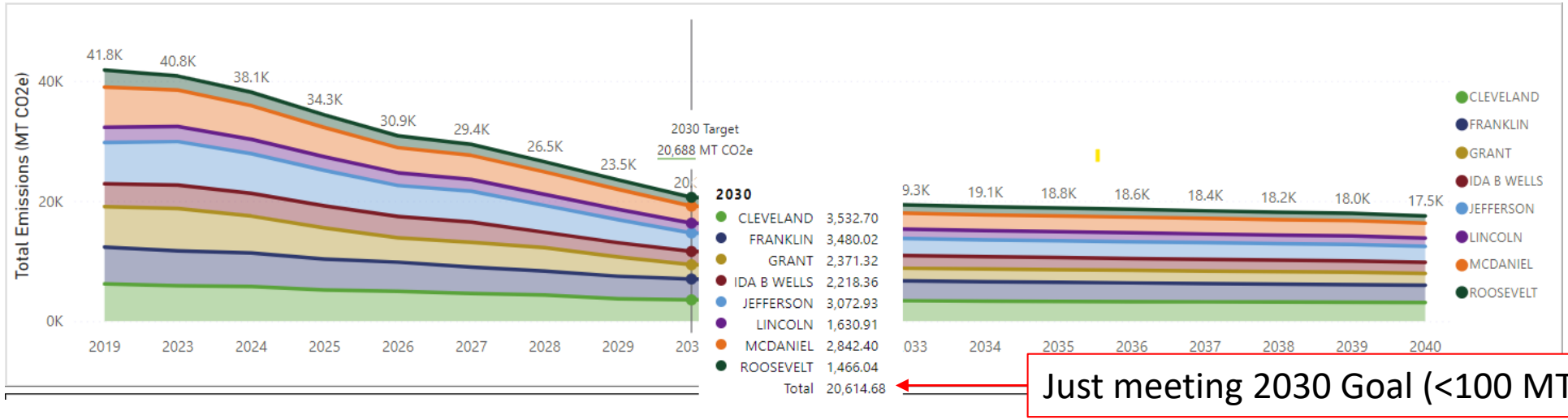
Scenario-3 (Planned only)

The estimated total cost of implementation is $521M

*Costs are a modeled scenario and include a 3.5% escalation factor. Note that political and economic factors may impact these numbers.

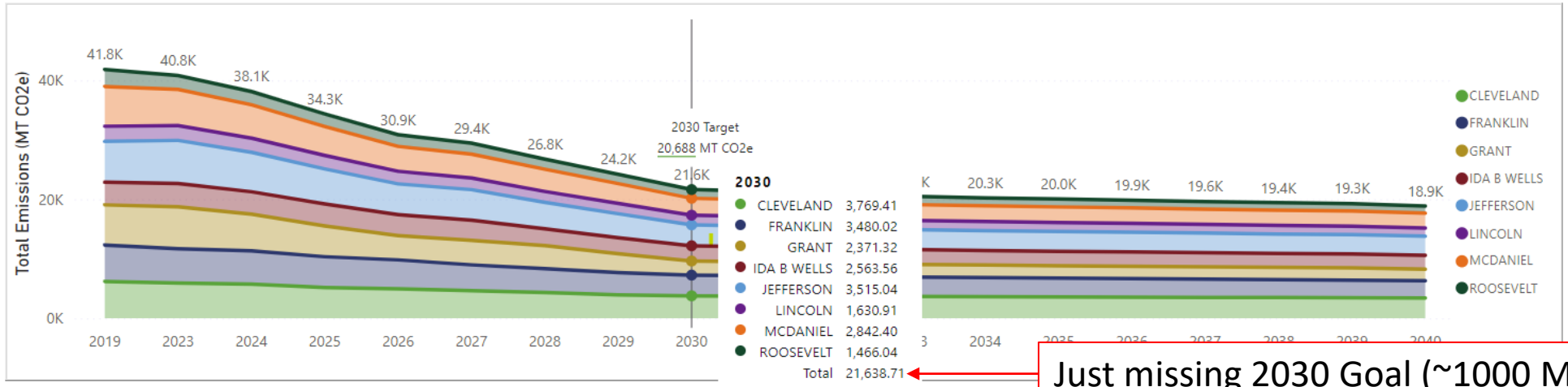
Scenario Comparisons – Planned Only Scenarios

Scenario-3 (Planned only)



Just meeting 2030 Goal (<100 MT Margin)

Scenario-4 (Planned without electrified high schools)



Just missing 2030 Goal (~1000 MT GAP)

Scenario Key Takeaways

To achieve PPS 2030 goals:

- Currently planned projects include **three remaining high school modernizations that meet PPS Sustainability Standards.**
- **Utilities meet the House Bill 2021** decarbonization goals

Will not meet 2030 goals if remaining HS modernizations do not electrify

House Bill (HB) 2021

- *By 2030: emissions must be 80% below baseline levels*
- *2035: 90%*
- *2040: 100%*

To achieve PPS 2040 goals:

1. Go all electric district-wide by 2040.
2. **Utilities meet the House Bill 2021** decarbonization goals.

Implementing the Roadmap

Incorporating this tool into practice

- **What will be delivered to PPS:**
  - Report with roadmap scenarios and approach documentation
  - Decarbonization and Prioritization Tool (Excel calculations and Power BI)
  - User guide and training
  - Community share out and communications packet
- **Policy implementation and decision making**
- **Emissions forecasting**
- **Storytelling and advocacy (in Portland and beyond)**
- **Bond planning and decision making**

How will this be funded?

- Bond dollars
- PCEF
- Grants
- Energy Trust
- SB 1149

Bond Dollars

PCEF

Grants

EnergyTrust of Oregon

SB 1149

Climate Benefits of this Roadmap

- This is a decarbonization roadmap that incorporates many factors to drive a decarbonized future.
- Decarb also addresses deferred maintenance and competing priorities.
- Prioritizes energy and carbon reductions while also weighing other factors such as, facility condition, equity, and indoor environmental quality.
- Provides clarity around the scope of decarbonization and what it means for PPS.
- This roadmap gives us a path for PPS buildings to be zero emissions by 2040.

Community Benefits of this Roadmap

The roadmap will help guide the district towards smart, equitable, efficient and cost-effective approaches to construction projects.

Projects will enhance the learning environment by alleviating thermal and IEQ issues (too hot, cold or outdoor contaminants like wildfire smoke).

Cooling in all schools will be prioritized.

Next Steps

Schedule and promote webinar and press release to share roadmap outcomes.

- Implement roadmap and decision making in current and future projects.

- Discuss with CCRC how they would like to engage with this roadmap.

Discussion