3RD ANNUAL ENERGY STORAGE GRAND CHALLENGE SUMMIT

Mission Overview: Strategic Perspectives for Creating a New Energy Future: Local to Federal

ENERGY STORAGE GRAND CHALLENGE
U.S. DEPARTMENT OF ENERGY

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MESC
OFFICE OF MANUFACTURING AND ENERGY SUPPLY CHAINS

Manufacturing & Energy Supply Chains Office

Office Overview with Battery Focus

Dave Howell – Principal Deputy Director
July 25, 2023

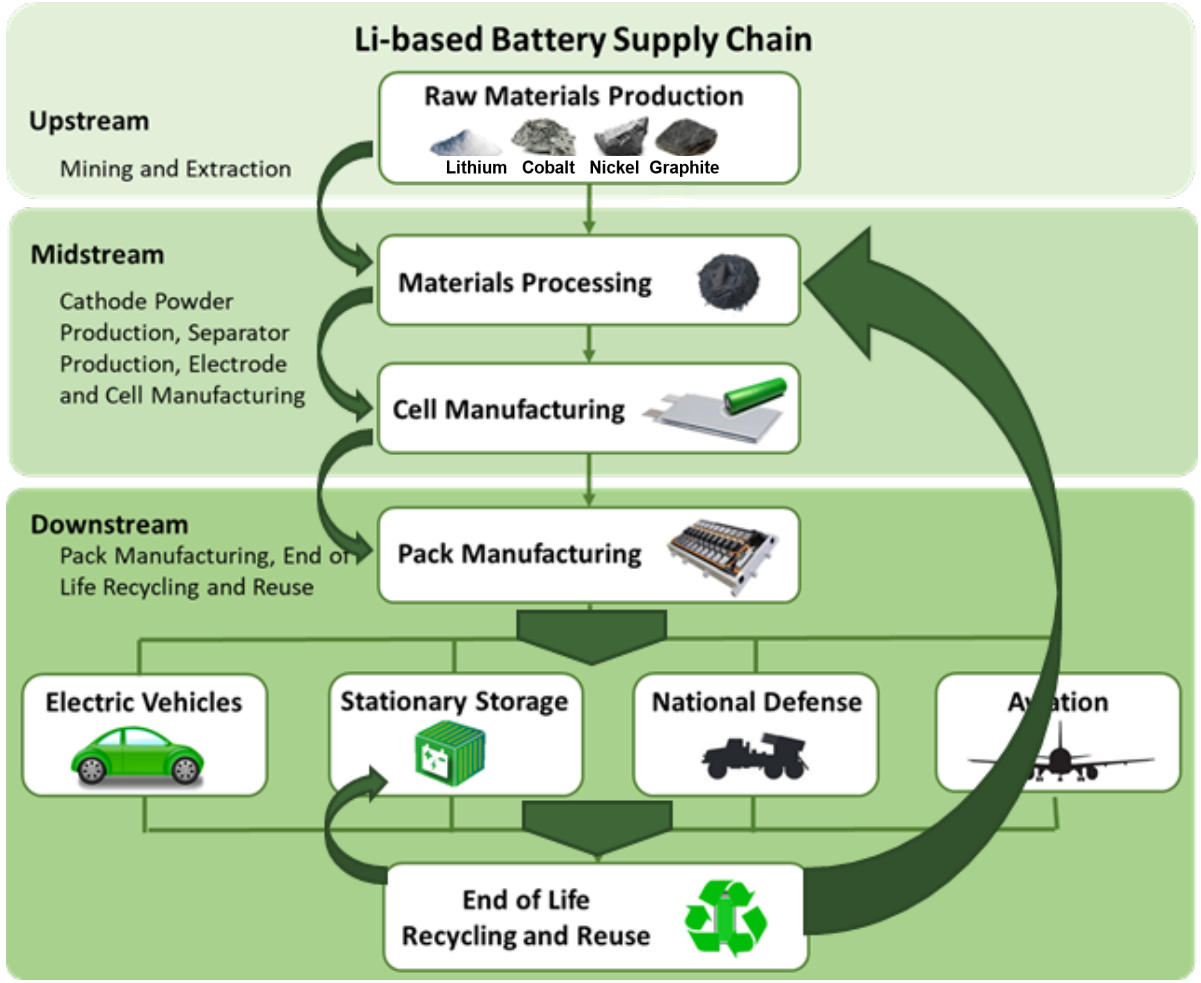
MESC Mission and Distinctives

Mission: Support Scale-Up and Deployment of manufacturing infrastructure critical to the Nation's energy supply to assure a resilient and sustainable energy sector industrial base (ESIB).

- New manufacturing infrastructure to fill critical ESIB gaps
- Manufacturing Facility Upgrades to Reduce Energy Burden and Industrial Base Carbon Emissions
- Develop domestic manufacturing and energy workforce capabilities and resources

Support integrated insights across manufacturing and energy supply chains

Battery Supply Chain and BIL, IRA, DPA



Bipartisan Infrastructure Law	Inflation Reduction Act	Defense Production Act
	Sec 13502 Advanced Manufacturing production Credit (45X)	**Ukraine Stimulus** $500 Million (DOD)
Section 40207(b)(c) Battery Manufacturing and Processing $6 Billion	**Sec 13401** Clean Vehicle [Tax] Credit (48C)	**IRA 30001** $250 Million (DOD)
	Sec 50143 Conversion Grants ($2 Billion)	
Section 40207(e)(f) $135 Million **Section 40208** $200 Million		

2022 IIJA 40207(b)(c) Battery Materials Processing and Battery Manufacturing
Funding Opportunity Selection Highlights

Projects Selected for Negotiation of Award	Total Federal Share	Recipient Share	Total Value of Projects
21	*$2,832*	*$6,251*	***$9,083***

1. Developing enough battery-grade lithium hydroxide to supply ~2 million EVs annually.
2. Developing enough battery-grade graphite to supply ~1.2 million EVs annually
3. Producing enough battery-grade nickel to supply ~ 400,000 EVs annually
4. Creating the first commercial scale domestic silicon oxide production facilities to supply anode materials for an ~600,000 EV batteries annually
5. Establishing the first lithium iron phosphate cathode facility in the U.S.
6. Establishing the first large-scale, commercial lithium electrolyte salt (LiPF6) production facility in the U.S.

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NEXT FUNDING OPPORTUNITY
Targeting Late Summer

Sign-up to receive updates at:
www.energy.gov/mesc

A National Collaborative Effort Toward a Sustainable Battery Ecosystem

Department of Energy

The Battery Joint Strategy Team (Battery JST) leads all-of-DOE effort to **accelerate RDD&D to achieve market lift-off** of game-changing technologies

Game Plan to help direct DOE investments across the Innovation and Deployment spectrum

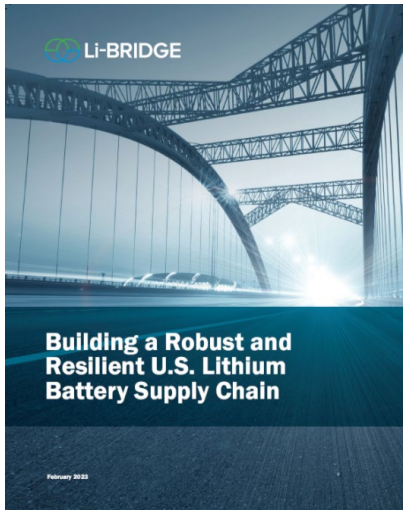
- RDD&D Thrust: Manufacturing
- RDD&D Thrust: Scale-Up
- RDD&D Thrust: Processing
- RDD&D Thrust: Materials
  - Highest Impact Focused Battery Technology RDD&D
  - Highest Impact Crosscutting RDD&D
  - Map to DOE Office Funding and Priorities

Federal Agencies

The Federal Consortium for Advanced Batteries (FCAB) leads All-of-Federal Government effort to **enable a resilient battery manufacturing ecosystem** to serve commercial and defense sectors.

Industry Stakeholders

The Li-Bridge alliance is a Public-Private Partnership effort to facilitate Industry-Government interaction to **accelerate growth of a resilient U.S. battery industry.**



26 Recommendations and 5 topics of focus in 2023

Questions?

Contact our team by emailing MESC@hq.doe.gov.

Thank you!

MESC

OFFICE OF MANUFACTURING AND ENERGY SUPPLY CHAINS

U.S. DEPARTMENT OF ENERGY

Office of the
UNDER SECRETARY
FOR SCIENCE & INNOVATION

Energy Earthshots Initiative

Jennifer Arrigo,
Director, Science and Energy Crosscuts
7/25/2023

ENERGY earthshots
U.S. DEPARTMENT OF ENERGY

Energy Earthshots Initiative: Call to Action

"…I've asked the Secretary of Energy…to **speed the development of critical technologies** to tackle the climate crisis. **No single technology is the answer** on its own because every sector requires innovation to meet this moment."

President Joseph R. Biden
April 23, 2021

"Over the coming weeks…DOE will be announcing new goals for bold, achievable leaps in next-generation technologies—

This is our generation's Moonshot."

Secretary Jennifer M. Granholm
April 23, 2021

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Energy Earthshot Guiding Principles

- Make a major impact to reduce emissions
- Address the hardest technology barriers
- Set highly ambitious decadal targets
- Are compelling, bold, and inspirational
- Significantly engage stakeholders

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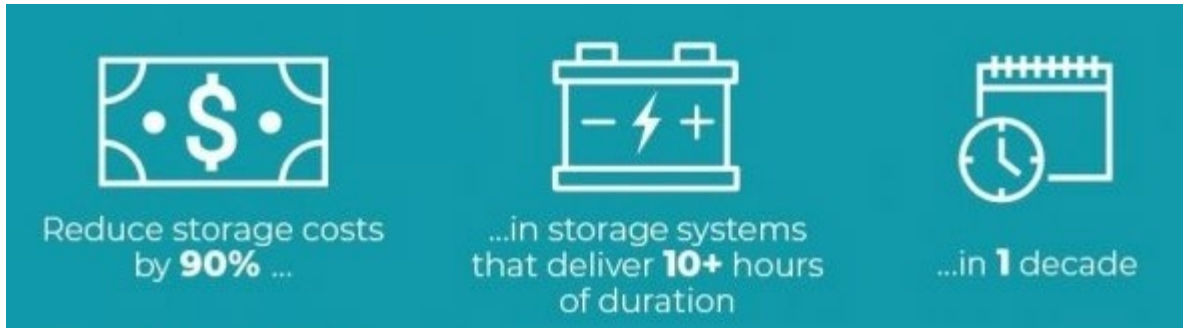

Long Duration Storage Shot™ seeks to reduce the cost of 10+ hour storage by 90% (compared to Lithium Ion in 2020) within a decade.

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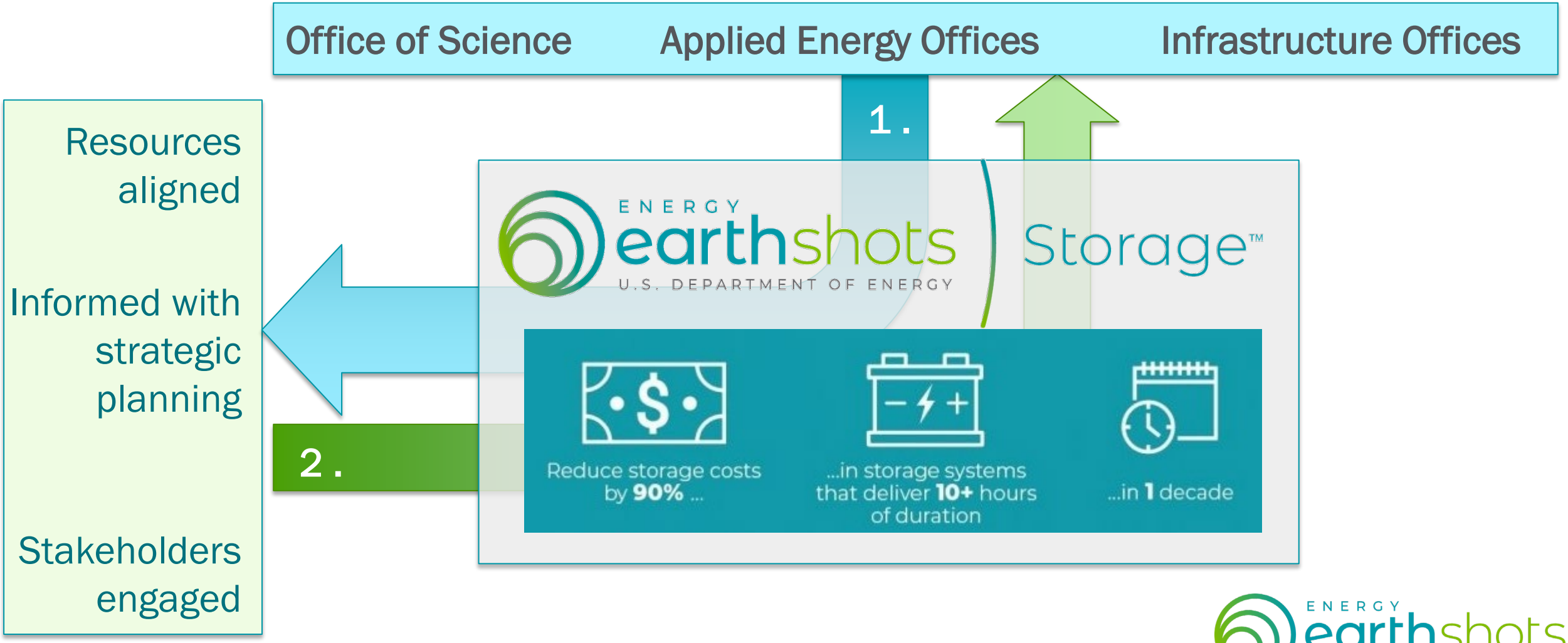
Strategic Alignment: Feedback loop

1. An Energy Earthshot focuses “All-hands” attention on a singular target
2. Scientific and strategic learnings, guides “All-hands”



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Strategic Alignment: What "All-Hands" looks like from the street

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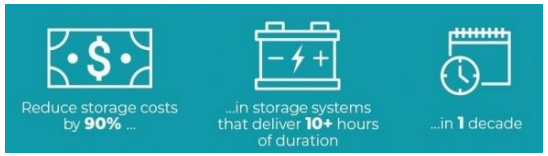

Snapshot of work 2021-2023	Office of Science	Applied Energy Offices	Infrastructure
Resources aligned	Energy Earthshot Research Centers	Grid Storage Launchpad, Applied Energy Funding Opportunities	BIL: Battery Materials Processing, Manufacturing, and Recycling Grants
Informed with strategic planning	Basic Energy Sciences Workshops, Reports, Roundtables	Technology Assessments Reports	Pathways to Commercial Liftoff: Long Duration Energy Storage
Stakeholders engaged	Batteries and Energy Storage Energy Innovation Hub	Energy Storage/Grand Challenge and Earthshots Summits	Battery Workforce Initiative

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The challenge requires *All-Hands-On-Deck* from *fearless innovators*

"We need fearless innovation to bring down the costs of batteries, to commercialize carbon capture, to make blue and green hydrogen market ready, and perhaps most of all, we need a mindset that overcomes resistance to change. Many are stuck on the status quo,"

Secretary Jennifer M. Granholm
President Biden's Leader Summit on Climate, "Unleashing Climate Innovation" Session,
April 23, 2021

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Thank you

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Clean Electricity Action Plan

July 25, 2023




U.S. DEPARTMENT OF ENERGY

During Hurricane Maria in 2017, destructive winds damaged renewable energy technology across the island of Puerto Rico. Photo from National Oceanic and Atmospheric Administration, National Weather Service, San Juan


High and volatile energy costs
are burdening American households
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Transitioning our economy to
clean electricity is a solution
Creates opportunities to transform and
revitalize our economy
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Creates good-paying jobs and a robust American-made infrastructure and technology supply chain
Delivers more stable and affordable electricity prices
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The Clean Electricity Action Plan

An all-of-society approach to rally stakeholders around priority activities to achieve a clean electricity sector

Clean Electricity Action Plan

- Accelerate Deployment of Clean Electricity Generation
- Modernize Energy Infrastructure
- Reduce Electricity Infrastructure Requirements
- Build a Secure and Resilient Clean Energy Economy

Accelerate Deployment of Clean Electricity Generation

1 Maintain the existing clean electricity generation and storage fleet and increase fleet flexibility where appropriate

2 Rapidly increase deployment of established clean generation and storage technologies

3 Increase options for clean generation, storage, and carbon management technologies

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Modernize Energy Infrastructure

4 Plan and deploy enabling infrastructure

5 Augment planning, operations, and markets

6 Ensure system security and resiliency as new technologies and threats emerge

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Reduce Electricity Infrastructure Requirements

7 Dramatically accelerate electric energy efficiency and demand flexibility

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Build a Secure and Resilient Clean Energy Economy

8 Proactively invest in and engage with disadvantaged and energy communities to ensure the impacts and benefits of clean power are distributed equally

9 Strengthen domestic manufacturing capabilities and develop resilient and sustainable supply chains

10 Equitably expand the domestic workforce to deliver a clean power system

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The Clean Electricity Action Plan is under development.
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CLEANTECH

METRO ATLANTA

Cynthia Curry
Sr. Director, Cleantech & Smart Cities Ecosystems
Metro Atlanta Chamber

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METRO ATLANTA RANKS IN THE NATION'S TOP 10 CLEANTECH HUBS

#1

Georgia is leading the country in new clean energy projects with the highest dollar value of new CleanTech projects in the US. Metro Atlanta is well-positioned to be the nation's Cleantech hub.

#3

The EPA ranked Atlanta in the top three U.S. metropolitan areas with the most ENERGY STAR-certified buildings.

#3

Site Selection Magazine ranked Georgia #3 for sustainability in the South Atlantic region, and Metro Atlanta ranked in the Top 10 nationally.

#5

Atlanta ranked the 5th Smartest City in the US based on the wealth of EV charging stations, green infrastructure, green-certified buildings, & the number of IoT companies per capita.

- ProptechOS

30

A CLEANTECH HUB

- Green sector companies have announced 35 projects in Georgia, building everything from EVs to e-bikes and the batteries that power them, pledging at least 28,000 jobs.

- Georgia is creating a circular EV ecosystem, boasting more than **$21 billion** in electric vehicle-related projects since 2020, bringing more than 26,700 jobs.

RECENT WINS & INDUSTRY LEADERS

ATL
Moving Atlanta Forward

3rd ANNUAL ENERGY STORAGE GRAND CHALLENGE SUMMIT

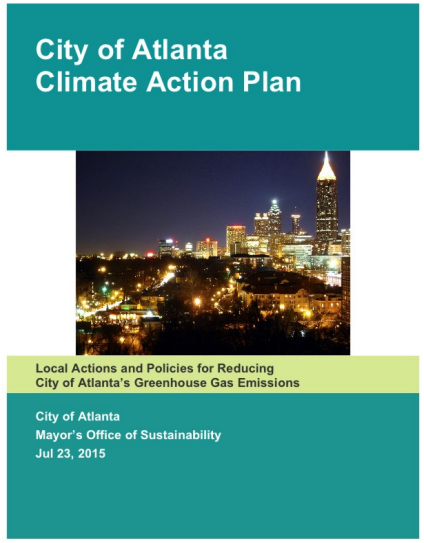
Chandra Farley, Chief Sustainability Officer
City of Atlanta, Mayor's Office of Sustainability and Resilience

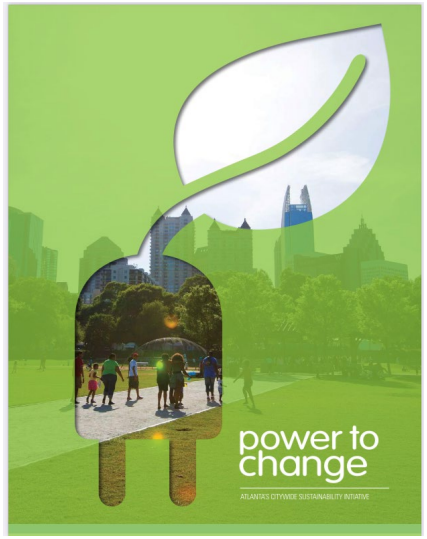
MAYOR'S OFFICE OF SUSTAINABILITY & RESILIENCE

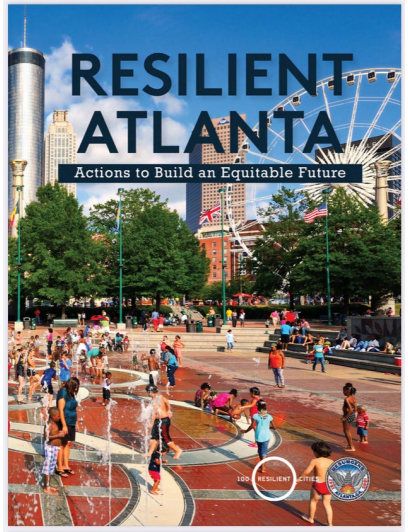
The Mayor’s Office of Sustainability & Resilience leads science-based analysis informed by the community to establish, develop, implement, and promote policies, programs, and initiatives related to environmental sustainability, climate resilience, circular economy and food security rooted in environmental justice.

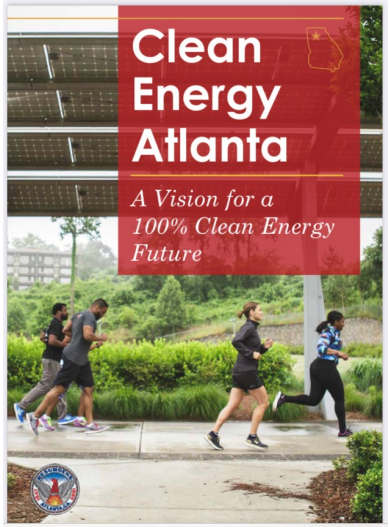
ATL
Moving Atlanta Forward

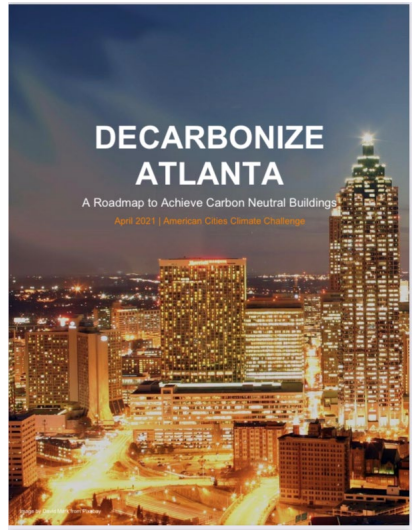
MAYOR’S OFFICE OF
Sustainability
and Resilience











AGLANTA

clean energy advisory board

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SOLAR ATLANTA

CITY OF ATLANTA

001-COA CT Martin Rec Ctr
002-COA Fire Station 12
003-COA Fire Station 18
004-COA Fire Station 38
007-COA Grove Park Rec Ctr
008-COA Ben Hill Rec Ctr
009-COA Fire Station 2
010-COA Fire Station 5
011-COA Auto Service Bldg
012-COA Thomasville Heights Rec Ctr
013-COA Grant Park Rec Ctr
014-COA CA Scott Rec Ctr
015-COA Fire Station 8
016-COA MLK Aquatic Ctr
017-COA ACET
018-COA Public Safety HQ
058-DWM RMC Ostara NRS
072-DWM UC Filter Bldgs
096-COA Rosel Fann Rec Center (RD1)
104-DWM UC Headworks
114-DWM UC Blower
115-DWM UC TWAS
131-DWM Clear Creek CSO

ONE ATL DEPARTMENT OF ENTERPRISE ASSET MANAGEMENT
Service, Execution, Accountability

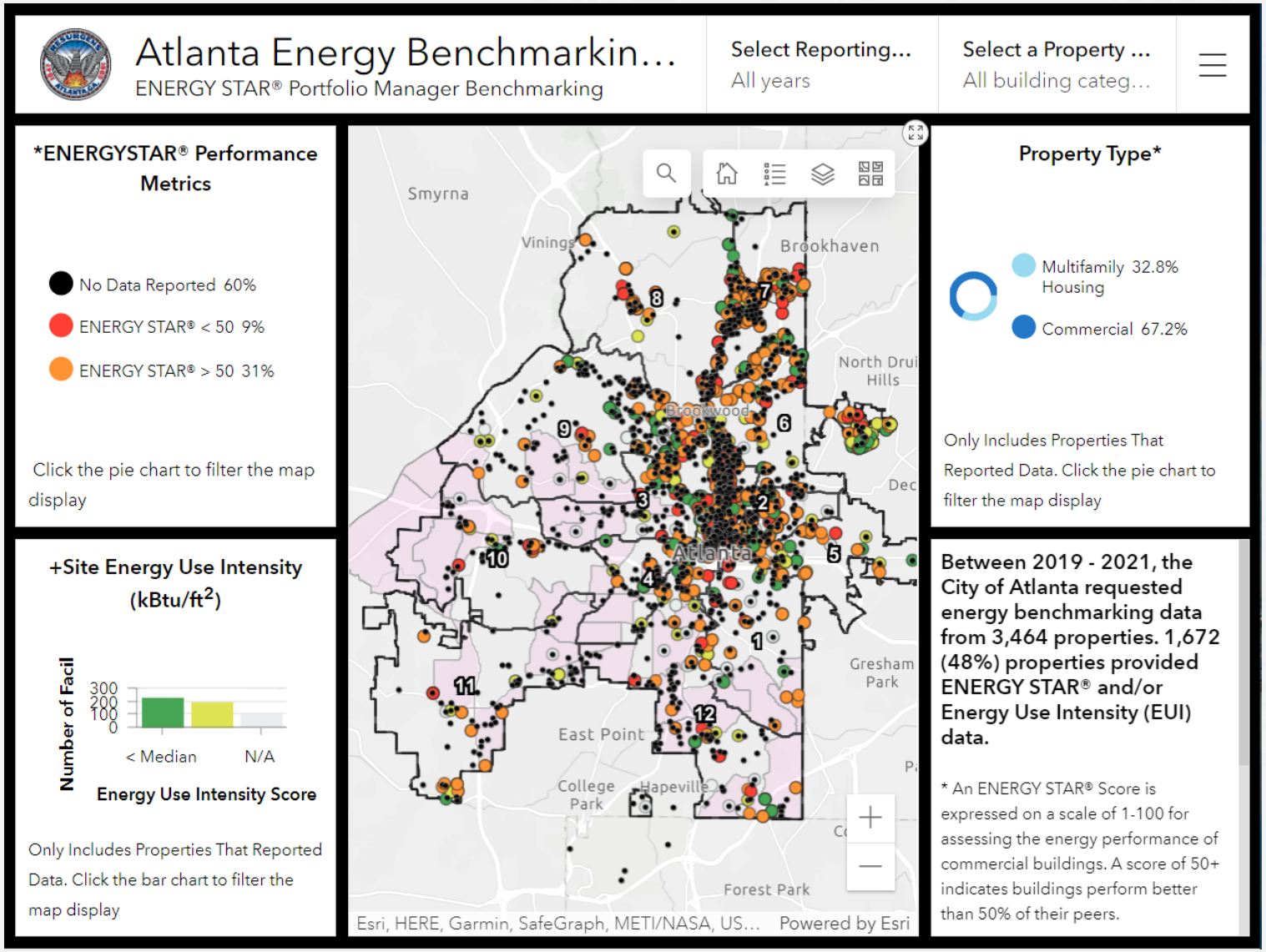
CITY OF ATLANTA DEPARTMENT OF watershed management

ATL PARKS & REC

ATLANTA FIRE RESCUE EST. 1882

CITY OF ATLANTA

Commercial Building Energy Efficiency Ordinance



THANK YOU!