



EFFICIENCY'S ROLE IN REBUILDING AMERICA

Chuck Hookham, PE



2017 ACEEE Energy Efficiency Finance Forum

Fairmont Chicago

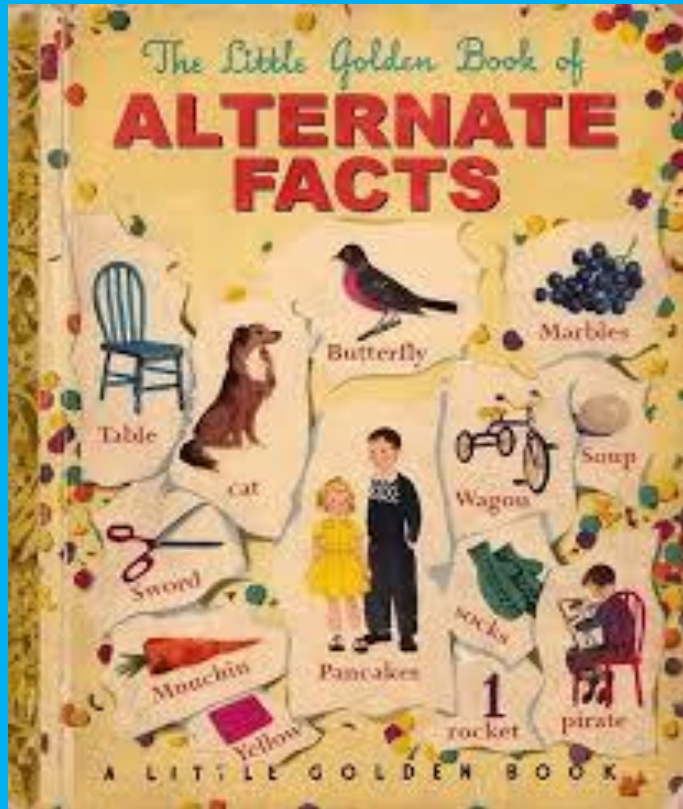
May 21 to 23, 2017



2017

INFRASTRUCTURE REPORT CARD

ASCE Report Card “Basics”



2017 Report Card Issue/Exposure

The screenshot displays the top navigation bar of the E&C website, featuring a search box, a magnifying glass icon, and links for 'About E&C', 'News Center', 'Hearings and Votes', 'Legislation', and 'Email Sign Up'. Below the navigation bar, the video player shows a man, identified as Mr. Hookham by the nameplate, speaking at a podium. He is holding up a blue report card titled '2017 INFRASTRUCTURE REPORT CARD' with the ASCE logo. The report card also features a map of the United States and the subtitle 'A multiplatform assessment of energy infrastructure'. To the right of the video player, there are social media sharing icons for Twitter, Facebook, YouTube, Instagram, and RSS. A 'MORE VIDEOS' button is visible in the bottom left corner of the video player area.

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Modernizing Energy Infrastructure:

ASCE

2017 INFRASTRUCTURE REPORT CARD

A multiplatform assessment of energy infrastructure

Mr. Hookham

MORE VIDEOS

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A blue-tinted photograph of a suspension bridge, likely the Golden Gate Bridge, viewed from a low angle looking up at the towers. The text "Committing to Infrastructure Today for America's Tomorrow" is overlaid in white, bold, serif font in the center of the image.

**Committing to
Infrastructure Today for
America's Tomorrow**

What the Grades Mean



EXCEPTIONAL
Fit for the future



GOOD
Adequate for now



MEDIOCRE
Requires attention



POOR
At risk



FAILING/CRITICAL
Unfit for purpose

Report Card Methodology

CAPACITY

**OPERATION AND
MAINTENANCE**

CONDITION

PUBLIC SAFETY

FUNDING

RESILIENCE

FUTURE NEED

INNOVATION

2017 Infrastructure Grades

 AVIATION	D	 PARKS AND RECREATION	↓ D+
 BRIDGES	C+	 PORTS	↑ C+
 DAMS	D	 RAIL	↑ B
 DRINKING WATER	D	 ROADS	D
 ENERGY	D+	 SCHOOLS	↑ D+
 HAZARDOUS WASTE	↑ D+	 SOLID WASTE	↓ C+
 INLAND WATERWAYS	↑ D	 TRANSIT	↓ D-
 LEVEES	↑ D	 WASTEWATER	↑ D+

America's
Cumulative
Infrastructure
Grade



A EXCEPTIONAL

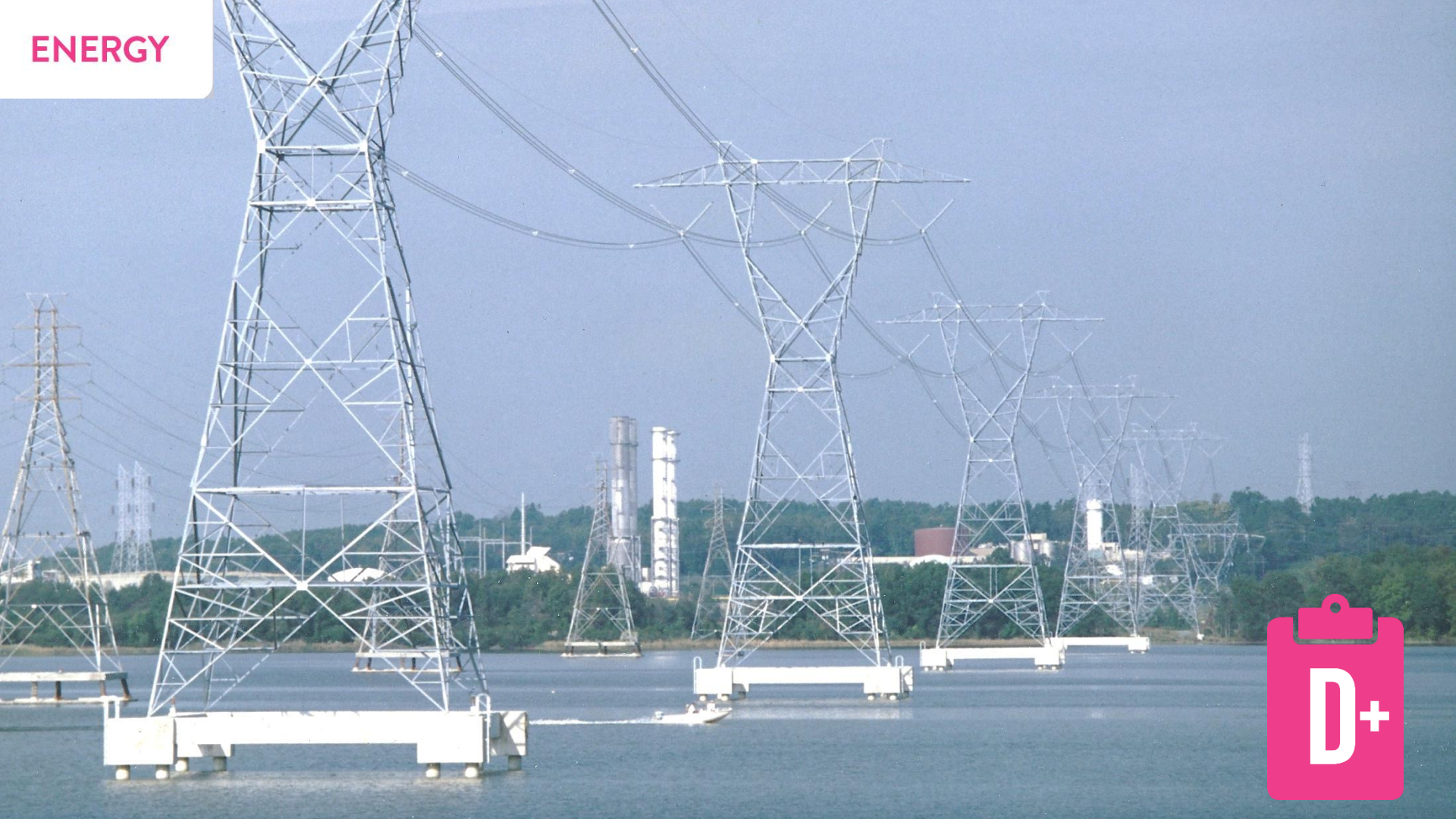
B GOOD

C MEDIOCRE

D POOR

F FAILING

ENERGY



ASCE
INFRASTRUCTURE
REPORT CARD



POWER INTERRUPTIONS ARE
IN EXCESS OF 3,500 PER YEAR

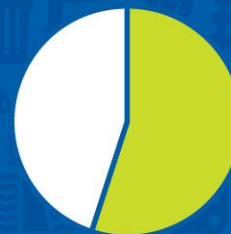


Investment Gap

2016–2025 (10 years)

Infrastructure Systems	TOTAL NEEDS	ESTIMATED FUNDING	FUNDING GAP
SURFACE TRANSPORTATION	\$2,042	\$941	\$1,101
WATER/WASTEWATER INFRASTRUCTURE	\$150	\$45	\$105
ELECTRICITY	\$934	\$757	\$177
AIRPORTS	\$157	\$115	\$42
INLAND WATERWAYS & MARINE PORTS	\$37	\$22	\$15
DAMS	\$45	\$5.6	\$39.4
HAZARDOUS & SOLID WASTE	\$7	\$4	\$3
LEVEES	\$80	\$10	\$70
PUBLIC PARKS & RECREATION	\$114.4	\$12.1	\$102.3
RAIL	\$154.1	\$124.7	\$29.4
SCHOOLS	\$870	\$490	\$380
TOTALS	\$4,590	\$2,526	\$2,064

\$2.0
trillion
needed



FUNDING
GAP

CURRENT
FUNDING



FAILURE TO ACT

CLOSING THE INFRASTRUCTURE
★ INVESTMENT GAP ★
FOR AMERICA'S ECONOMIC FUTURE

COST TO THE ECONOMY

\$3.9
TRILLION

COST TO BUSINESS

\$7
TRILLION

COST TO WORKERS

2.5
MILLION JOBS

COST TO FAMILIES

\$3,400
PER YEAR

A green-tinted image showing a city skyline with light trails from traffic on a road in the foreground.

Investment

A blue-tinted image showing a city map with a network of streets and buildings.

**Leadership &
Planning**

A red-tinted image showing the Golden Gate Bridge in San Francisco.

**Preparation
for the future**



SOLUTIONS

Investment

Increase investment from all levels of government and the private sector **from 2.5 percent to 3.5 percent** of U.S. Gross Domestic Product (GDP) by 2025.

Put the “**trust**” back into “**trust funds.**”

Fix the Highway Trust Fund by raising the federal motor fuel tax

Authorize programs to improve specific categories of deficient infrastructure

Infrastructure owners and operators must charge, and Americans must be willing to pay, rates and fees that reflect the **true cost of using, maintaining, and improving all infrastructure**

SOLUTIONS

Leadership & Planning

Leaders from all levels of government, business, labor, and nonprofit organizations must come together to ensure **all investments are spent wisely**

Require all projects greater than \$5 million that receive federal funding use **life cycle cost analysis**

Create incentives for maintenance

Develop tools to prioritize projects

Streamline the **project permitting process**

Identify projects attractive to **private sector investment and public-private partnership**



SOLUTIONS

Preparation for the future

RE·SIL·IEN·CY *n.*

To more quickly recover from significant weather and other hazard events

SUS·TAIN·A·BIL·I·TY *n.*

Improving the “triple bottom line” with clear economic, social, and environmental benefits

Develop active **community resilience programs**

Consider **emerging technologies and shifting social and economic trends** when building new infrastructure

Improve **land use planning** at the local level

Support **research and development** into innovative new materials, technologies, and processes

Principles for Infrastructure Investment

Investments must provide **substantial, long-term benefits** to the public and the economy

The cost of a project over its entire life span—including **designing, building, operating, and maintaining** the infrastructure—must be taken into account

Projects should be built **sustainably and resiliently**

Federal investment should leverage **state, local, and private investment**, not replace these other critical sources of infrastructure funding

So Where Does Large-Scale EE Fit?

- EE reduces demand; “generation” investment shift to “T&D”, other DSM
- Recent MI storms proved smart grid investments (sensors, reclosers, DSCADA) in terms of SAIDI metrics and improved efficiency
- CEC received EPA ENERGY STAR® Partner of the Year (2015, 2016, 2017....)
- C&I, residential customers - over \$1 billion saved since 2009 (energy waste reduction)
- 2017 EE Potential Study for CMS – 1% annual savings goal → increase to 1.5%
- EE investment to value – 2017 - CEC spends 95% of cap for 106% savings; 2018 savings to 150% + (robust metrics/MPSC reports)



PEOPLE

- **Customer experience:** Utility industry top quartile
- **Contain customer bill growth:** Electric – residential & commercial <3%, industrial flat; gas bill growth to fund needed upgrades



PLANET

- **Carbon reduction** beyond compliance (achieved >20% reduction a decade earlier than required)
- Proactive reductions in **landfill and water use**

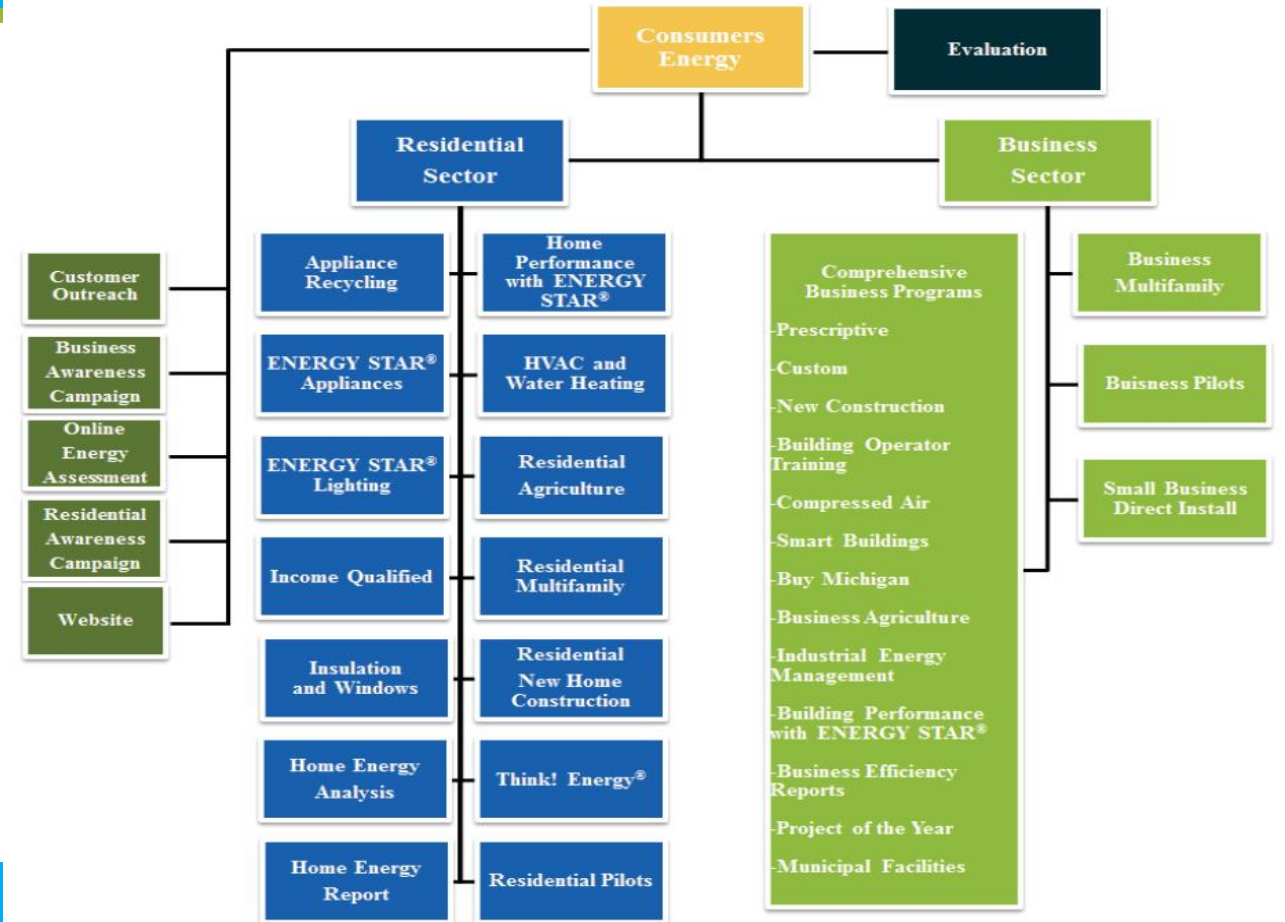


PROFIT

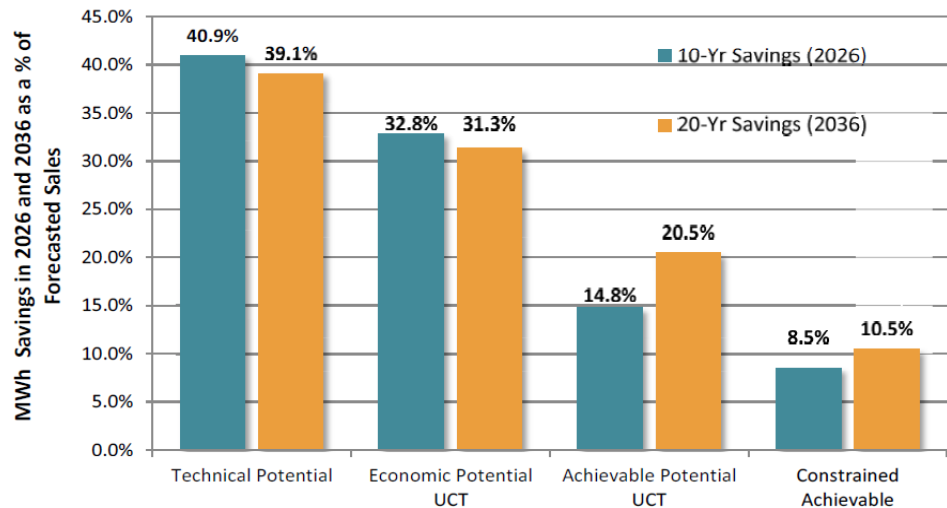
- **EPS growth** consistently at the top quartile of our peers (currently 6%-8% per year)
- **Predictability** of annual EPS growth

PERFORMANCE: industry leader for safety, operations and culture

Consumers Energy – EE Portfolio



CEC 2016/2017 EE Potential Study - Results



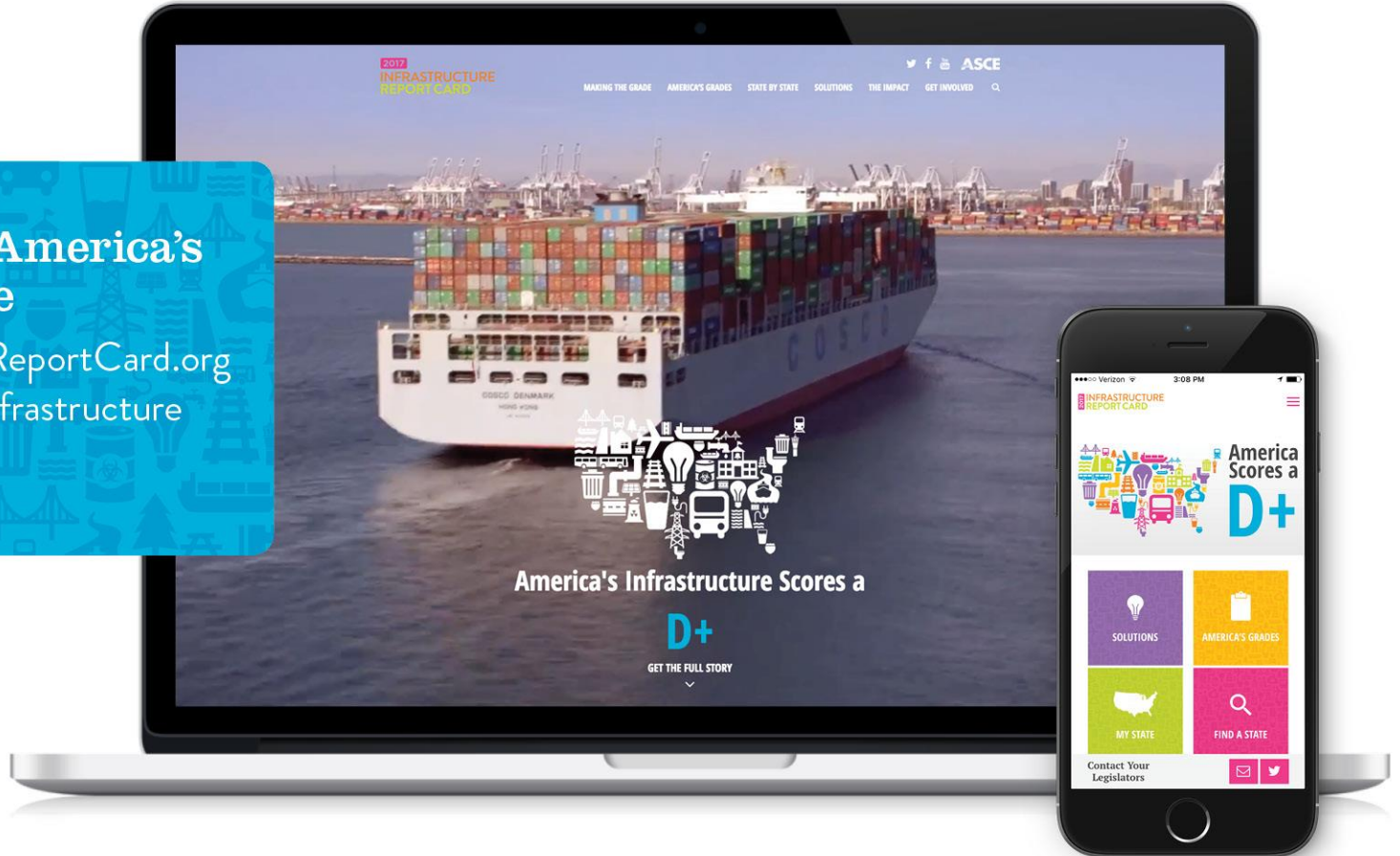
CEC ELECTRIC INVESTMENT – Year	2016	2017	2018	2019	2020	2021
Planned Investment (\$)	\$77.3	\$78.7	\$118.1	\$115.4	\$116.7	\$118
Planned Savings (MWh)	351,811	359,328	558,260	528,556	531,672	532,376
Percent of Target	106%	107%	168%	158%	159%	158%

Local EE Outreach – Making Potential a Reality

- Local EE adoption/funding needed vs. federal or state; financing tailored to local owner
- PACE, investment banks, others can work
- City of Ann Arbor example - refocus from robust renewable energy to EE
- Advancing energy codes need adoption (e.g., MA stretch code)

Help Restore America's Infrastructure

Visit InfrastructureReportCard.org and download the Infrastructure Report Card app



Thank You

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