Let's Amp Up Investment TO MEET OUR FUTURE ELECTRICITY INFRASTRUCTURE NEEDS

BY 2029, THE ELECTRICITY INFRASTRUCTURE INVESTMENT GAP IS ESTIMATED TO BE $208 billion WITH IMPACTS COSTING CUSTOMERS:

- Residential: $20B
- Commercial: $487B
- Industrial: $448B

New investments can protect:

- 287,000 jobs in 2029, especially in the areas of manufacturing, finance, and real estate.
- $185 billion in personal income
- GDP $394 billion
- $51 billion in US exports

Learn more at www.asce.org/failuretoact
in·fra·struc·ture - the basic physical and organizational structures and facilities needed for the operation of a society or enterprise

“Sustainable development is...

...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

-Sustainable Infrastructure - Brundtland Commission Report 1987
“ASCE and its members are dedicated to ensuring a sustainable future in which human society has the capacity and opportunity to maintain and improve its quality of life indefinitely, without degrading the quantity, quality or the availability of natural, economic and social resources.”
“If we put off doing right things...”

ASCE Five-year Roadmap to Sustainable Development

Priority 1 – Do the Right Project
Priority 2 – Do the Project Right
Priority 3 – Expand Technical Capacity
Priority 4 – Communicate and Advocate
prioritizing right things...

DO THE RIGHT PROJECT

- What are the needs of society today?
- What will the needs of society be in the near future?
- Is this project shovel-worthy, or merely shovel-ready?
do the right project -

CHANGE IS HARD.
do the right project -

CHANGE  HAPPENS.

- The definition of infrastructure hasn’t changed in thousands of years.

- The face of infrastructure changes with every generation.
The definition of infrastructure hasn't changed in thousands of years. The face of infrastructure changes with every generation. do the right project
Fast and Slow Drivers of Change

- Fast - Positive and Negative Disruption
  - actions of humans
  - events of nature

- Slow - a Continuous Drift
  - desire for improved livability
  - health, safety, security
do the right project

Infrastructure - the basic physical and organizational structures and facilities needed for the operation of a society

Alabama Infrastructure Grades

- AVIATION: B+
- BRIDGES: C
- DAMS: D
- DRINKING WATER: C+
- ENERGY: B
- INLAND WATERWAYS: D+
- PORTS: B-
- RAIL: B-
- ROADS: D+
- TRANSIT: D
- WASTE AND STORMWATER: C

2017 Infrastructure Report Card

Over the last four years, several infrastructure categories showed progress, resulting in grade increases. However, the 2017 Report Card's cumulative GPA of D+ reflects the significant backlog of needs facing our nation's infrastructure writ large. Underperforming, aging infrastructure remains a drag on the national economy, and costs every American family $2,400 per year.
structure - the basic physical and organizational structures and facilities needed for the operation of a society or enterprise

The benefits people obtain from ecosystems.

- Provisioning services
- Regulating services
- Cultural services
- Supporting services
### Site-specific Targeted Monitoring Summary Results

#### Alabama (2006)

<table>
<thead>
<tr>
<th>Size of Water</th>
<th>Good Waters</th>
<th>Threatened Waters</th>
<th>Imperiled Waters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers and Streams (Miles)</td>
<td>6,983.6</td>
<td>1,514.8</td>
<td>2,547.3</td>
</tr>
<tr>
<td>Lakes, Reservoirs, and Ponds (Acres)</td>
<td>91,229.2</td>
<td>6,428.5</td>
<td>81,837.8</td>
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<tr>
<td>Rays and Estuaries (Square Miles)</td>
<td>78.7</td>
<td>2.6</td>
<td>426.8</td>
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<tr>
<td>Ocean and Near Coastal (Square Miles)</td>
<td>201.0</td>
<td>201.0</td>
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**Previously impaired waters now attaining all uses:**

- Prioritizing right things...

#### Alabama (2016)

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</table>

**Previously impaired waters now attaining all uses:**

- Prioritizing right things...

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**Impaired in 2006:**
- 27% of assessed rivers
- 47% of assessed lakes

**Impaired in 2016:**
- 23% of assessed rivers
- 53% of assessed lakes
Environmental, economic, social and technological development must be seen as interdependent and complementary concepts, where economic competitiveness and ecological sustainability are complementary aspects of the common goal of improving the quality of life.

– ASCE Policy Statement 418
Livability – being fit to live in, enjoyable
Sustainability – the ability to be maintained or balanced
Resilience – the ability to withstand or recover quickly from difficult conditions
Quality of Life vs. Resource Use

Approximate definition of “good” quality of life

Resources available on Earth

Sustainability Quadrant

Quality of Life vs. Resource Use

Envision is a Joint Collaboration

ISI Founding Organizations

Barry Fagan, PE/PLS, ENV SP, CPMSM, CPESC, CESSWI
Envision’s Focus - Sustainable Development

**Social-Environmental**
- Environmental Justice
- Natural Resources Stewardship
- Locally & Globally

**Environmental**
- Natural Resource Use
- Environmental Management
- Pollution Prevention (air, water, land, waste)

**Environmental-Economic**
- Energy Efficiency
- Subsidies / Incentives for use of Natural Resources

**Social**
- Standard of Living
- Education
- Community
- Equal Opportunity

**Sustainable**

**Economic**
- Profit
- Cost Savings
- Economic Growth
- Research & Development

**Economic-Social**
- Business Ethics
- Fair Trade
- Worker’s Rights

**Triple Bottom Line**
Do the project right - make the most of opportunities
Do the project right – mitigation hierarchy

- **Avoidance:** Measures taken to avoid creating impacts from the outset
- **Minimization:** Measures taken to reduce the duration, intensity or extent of impacts that cannot be avoided
- **Abatement:** Measures taken to rehabilitate degraded ecosystems
- **Offsetting:** Measures taken to compensate for any residual adverse impacts
Envision Credits - 64 in 5 Categories

**Quality of Life**
- Wellbeing, Mobility, Community
- 14 Credits

**Leadership**
- Collaboration, Planning, Economy
- 12 Credits

**Resource Allocation**
- Materials, Energy, Water
- 14 Credits

**Natural World**
- Siting, Conservation, Ecology
- 14 Credits

**Climate & Resilience**
- Emissions, Resilience
- 10 Credits
The right project done right: Oregon Avenue Reconstruction

Sustainable features that contributed to this project earning Envision Silver include:

- Improving Safety and Access to Alternative Modes of Transportation
- Preserving Views and Local Character
- Providing Ample Opportunities for Stakeholder Involvement
DESIGNING YOUR BIORETENTION PLANTER

1. FIND YOUR ADDRESS:
   Find your address and the number of modules associated with your address. See Poster A - "Addresses with Bioretention Planters".

2. PICK YOUR MODULE SCHEMES:
   See Poster B - "Modules and Planting Schemes".

3. WRITE DOWN YOUR MODULE SCHEME CHOICES:
   Choose your modular schemes.

4. PICK YOUR PLANT CHOICES:
   See Poster C - "Plant List".
   - Trees
   - Shrubs
   - Perennials
   - Grasses

YOUR MODULAR CHOICES:

A B

RESULTING WITH THIS PLANTING LAYOUT:

PLANT SELECTION:
- Trees
  - Red Oak
  - Eastern Redbud
- Shrubs
  - Black Huckleberry
  - Rosemary
- Perennials
  - Eastern Red Columbine
  - Butterfly Milkweed
- Grasses
  - Sporobolus
  - Big Bluestem
Oregon Avenue Reconstruction: the right project, done right to maximize the return investment to the community and environment
Strategies For Changing the Industry

- Make incremental improvements
- Use standardized tools and metrics
- Document sustainable practices
- Monitor performance
- Share lessons learned
- Taking a global view, while keeping in mind local values

Sustainable Infrastructure -
Strategies For Changing the Industry

Sustainable Infrastructure -

- Take care of our stuff
- Invest in things of value
- Consider the needs of all people
- Maximize the return on our investment
It’s not your fault, but it might be your responsibility - a fork in the road on the way to becoming a professional.

- Seth Godin
Discussion.