ASCE &
Alabama Section
2015

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ASCE News

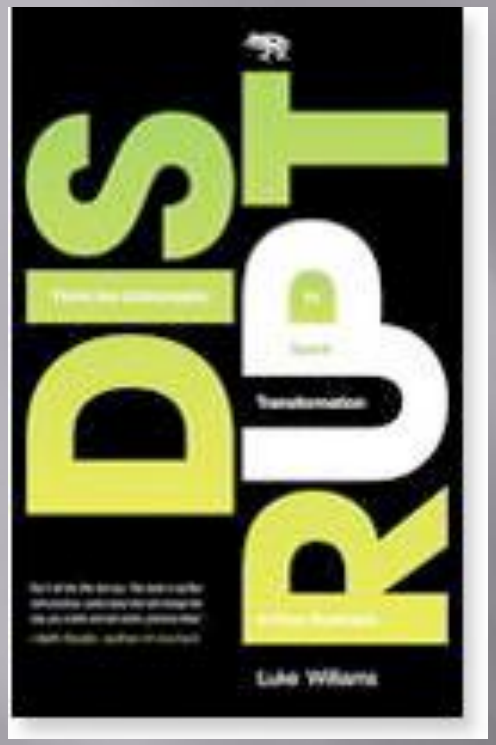
Recognized by local and national officials as authority on infrastructure

- 150,000 members
- Students up significantly
- Over 7500 very active
- 177/196 countries
- 11 new student chapters (43)
- LinkedIn > 200,000
- Released 9 state report cards
- Dream Big Imax release 2017
- Raise the Bar
- CE Clubs – high schools
- Envision

ASCE Vision 2025

Entrusted by society to create a sustainable world and enhance the global quality of life, civil engineers serve competently, collaboratively, and ethically as master:

- **Planners, designers, constructors, and operators of society's economic and social engine – the built environment**
- **Stewards of the natural environment and its resources**
- **Innovators and integrators of ideas and technology across the public, private, and academic sectors**
- **Managers of risk and uncertainty caused by natural events, accidents, and other threats, and**
- **Leaders in discussions and decisions shaping public environmental and infrastructure policy**

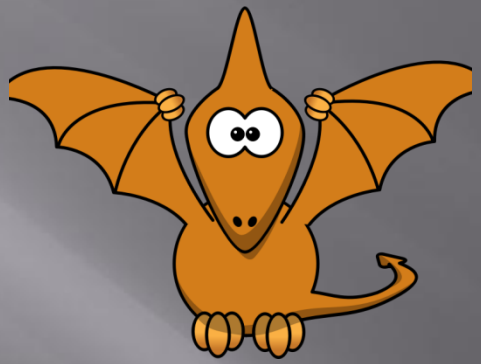


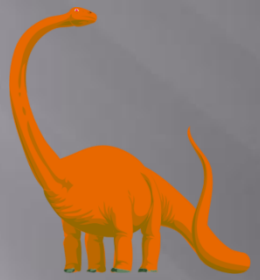
DISRUPT – Think the Unthinkable to Spark Transformation in Your Business

By Luke Williams

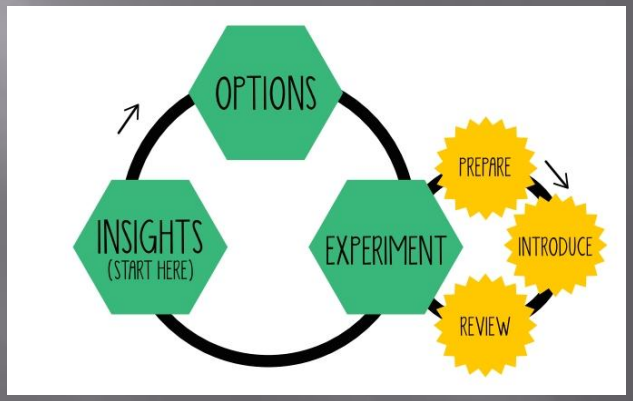
- Change your lens
- Cultivate an instinct for change
- Learn to take ingredients and find a new arrangement, use a different way that provides value
- The problem with problems, they always get attention
- Biggest opportunities for change are the ones that seem to be fine, no change needed, done as always has been done
- How many decisions made today are based on some decision made in a different time/context?

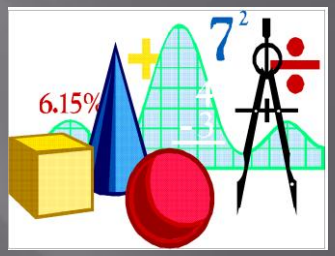
Choices Ahead

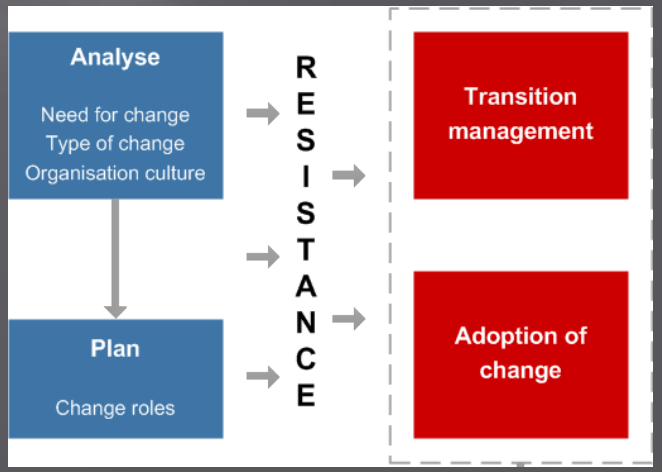




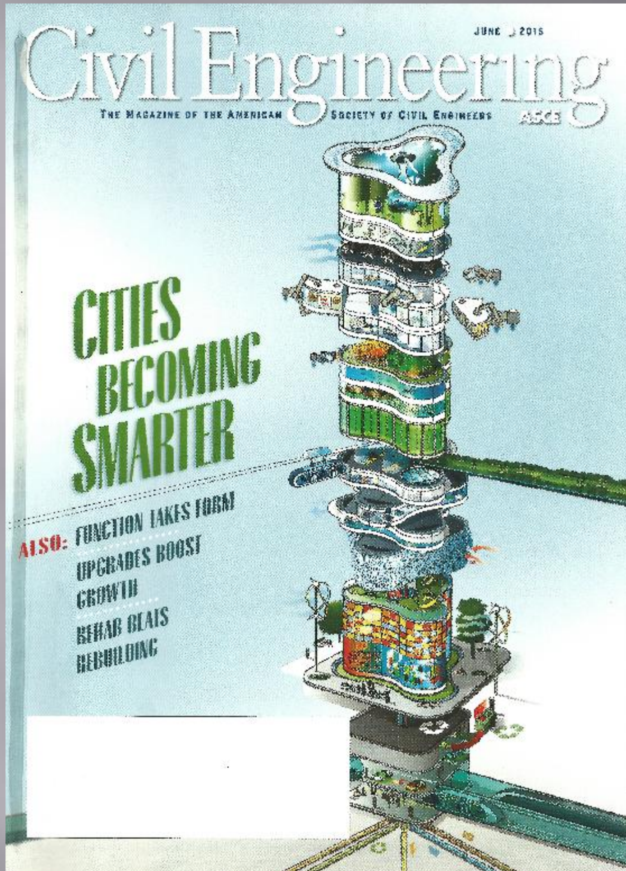
Taking Control & Leading Change

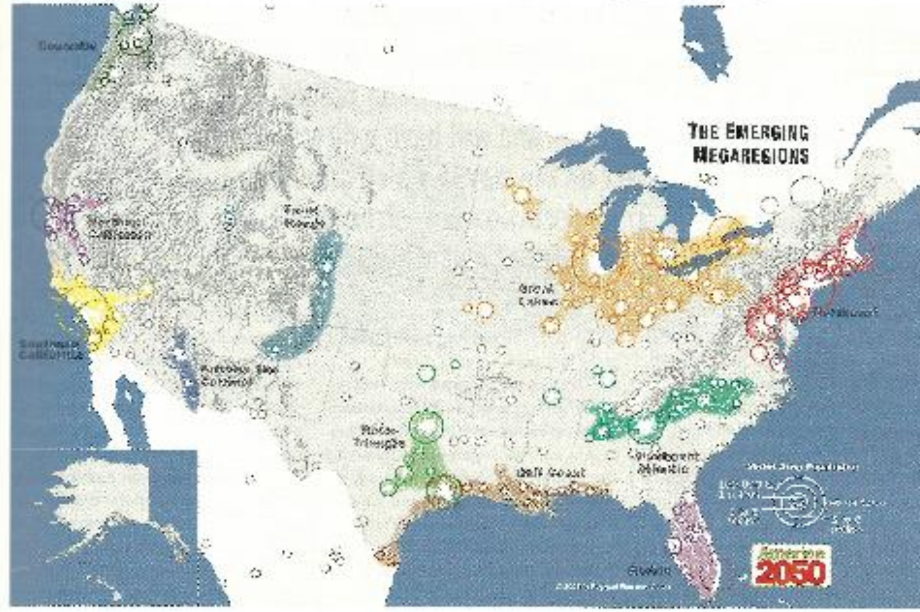






Trends





INFRASTRUCTURE

U.S. DOT Predicts Significant Future Transportation Problems

IT IS A WELL KNOWN fact that infrastructure in the United States is deteriorating. Indeed, the average grade in ASCE's 2013 *Report Card for America's Infrastructure* was a woeful D+.

The U.S. Department of Transportation (DOT) reports that the condition of 65 percent of U.S. roads is less than satisfactory, that a quarter of U.S. bridges need significant repair, and that 45 percent of Americans do not have access to mass transit.

TAKING THE CONCEPT of an elevated park to the next level, the Dutch architecture firm MVRDV has won a competition to transform a decommissioned section of an elevated highway in Seoul, South Korea, into what it calls a Skygarden, which will serve not only as a park but also as a nursery, a market, and a walkway. The firm's intent is to breathe new life into the 938 m long overpass, which extends over a busy rail station. Deemed unsafe for heavy vehicles in 2009, the 17 m high structure was to be torn down, but residents and experts intervened. Because the highway connects parts of the city that feature parks and a traditional Korean market, it made sense to retain the crossing, which pedestrians will be able to traverse in 11 minutes, whereas 25 minutes are required to walk around the train station. MVRDV's design calls for 254 species of trees, shrubs, and flowers to be planted in modular groupings arranged alphabetically according to their names, creating "neighborhoods" that can easily be recognized and navigated. Plants can be added and deleted over time, creating a living library of foliage that can also serve as a nursery for nearby civic spaces that require plants and trees, according to the architects. The design also includes a number of focal points along the way that MVRDV refers to as activators, which are intended to attract visitors and, in some cases, generate revenue to pay for the renovations. These activators will include an outdoor library, cafés, shops, greenhouses, fountains, seating areas, and observatories. Stairways, elevators, and ramps will link the structure to surrounding parks and pathways. The landscape architecture firm Ben Kuipers, of Delft, the Netherlands, and the structural engineering firm Saman and Grobs, of Seoul, are among the partners that contributed to the winning design; the government of Seoul hopes to complete the project by 2017.

Solutions: Moving Toward the Future

- Life Cycle Cost Analysis
- Game Changers
- Innovative Financing
- Sustainability
- Resiliency
- Local Report Cards

Latest Program

Grand Challenge – Industry Leaders

- Council ’14
- Reduce the life-cycle cost of infrastructure by 50% within 10 yrs
- Demonstrate leadership and innovation in infrastructure investments

Innovation Contest

- Professionals, educators, researchers, and students
- Submit most creative, most innovative ideas for reshaping the world’s infrastructure
- 4 Categories
  - business models and technologies
  - “Internet of Things”
  - green engineering
  - resilence

Alabama Section Mission

To support each Branch and Student Chapter in it's local efforts, monitoring and coordinating responses best handled at a statewide level, all while promoting and protecting the civil engineering profession and serving the public good by bringing attention to infrastructure needs and opportunities for students in the civil engineering profession.

Alabama Section

Send rising branch, younger member, and student chapter leaders to training

- MLRC's
- PFATW workshop
- President & Governors Forum
- Statewide Student Chapter Meeting
- Statewide Younger Member Meeting

- Budget
  - Report Card
  - Dam Safety
  - Funds to branchs & students
  - Younger member event
- Start strategic planning process
- Mission statement
- Update processes
  - Constant Contact
  - Quarterly newsletter
  - Monthly conference calls

Alabama Section Budget

Requirements for additional allotment

- Representative attend each Board meeting
- Attend monthly conference calls
- Representative to sit on section meeting planning committee
- Provide a budget
- 3 goals for year and update
- Article for section newsletter
- Travel funds
  - Show hardship to send 1 member to MLRC
  - Send YM to MLRC along with member
  - Send Practitioner Advisor/Faculty Advisor to PFAT Workshop
  - Send officer to President/Governors Forum

Want more information?

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Alan Parker
President Elect

Maggie Weems
Secretary/Treasurer

Kendall Kirkpatrick
Vice President

Michael Hora
Past President

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Infrastructure Report Card

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Report Card History

Infrastructure Report Card Concept Originated in 1988

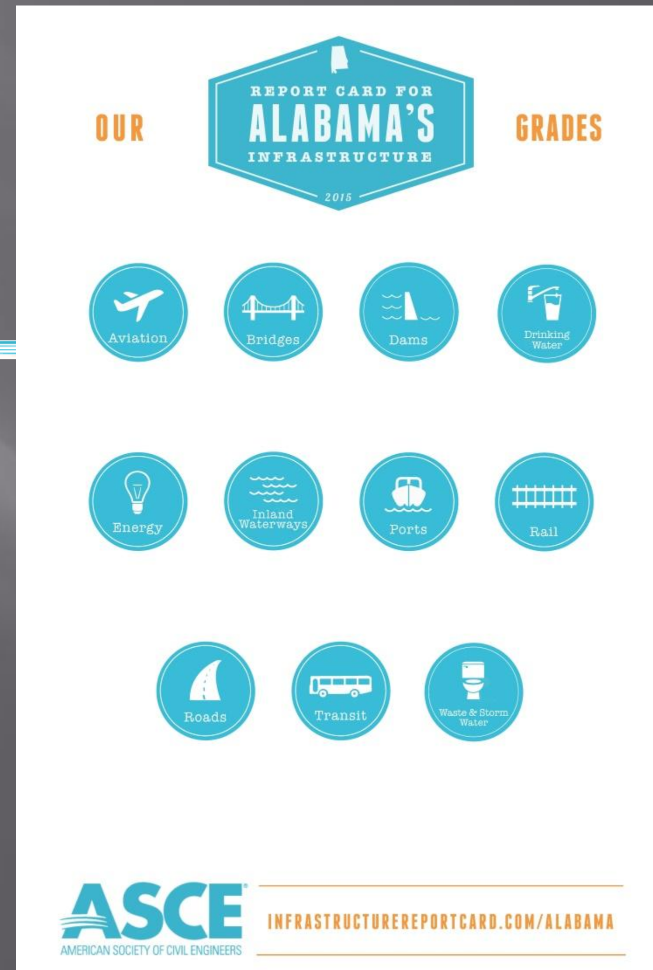
- Congress chartered the **National Council on Public Works Improvement** report, **Fragile Foundations: A Report on America's Public Works"**
- Overall score was a "C" across 10 categories
- Problems - increasing congestion, deferred maintenance, and ageing system
- Concern - inadequate investment for current operation and future demands
- Federal government did not plan to update the report

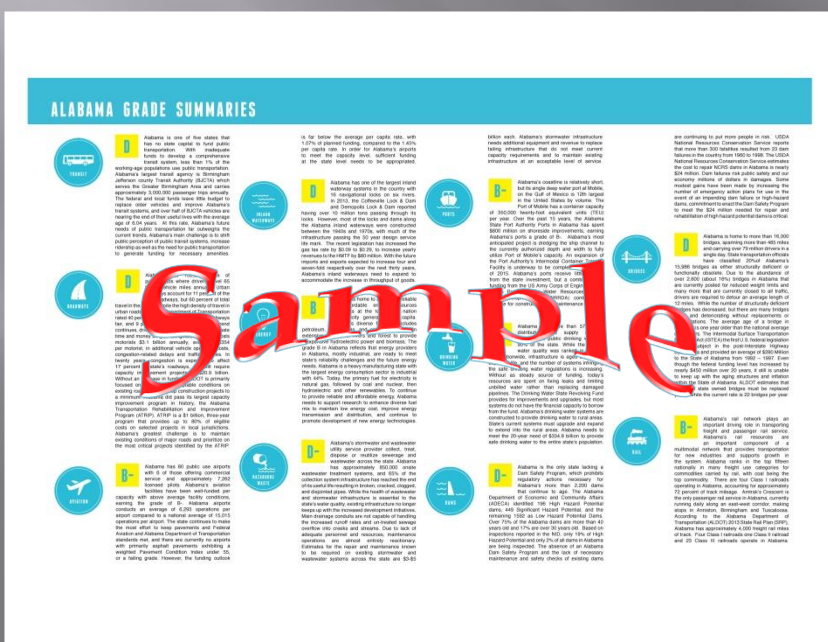
Report Card History

ASCE took up the reins

- Utilized same approach & methodology
- 1st Report Card produced in 1998
- Infrastructure Report Cards
  - 2001, 2005, 2009, & 2013
  - From 11 to 16 categories
- Methodology is rigorously assessed considering all of the changing elements that affect infrastructure
- Committee on America's Infrastructure
  - Consists of over 30 engineers
  - Guides national and local report cards
  - Oversees the data analysis & development
  - Works with ASCE staff
  - Review and assess data & reports
  - Consult with technical & industry experts


ALABAMA'S INFRASTRUCTURE MATTERS
ABOUT US
BEHIND THE GRADES
A 90 - 100% EXCEPTIONAL
B 80 - 89% GOOD
C 70 - 79% MEDIOCRE
D 60 69% POOR
F 50% or lower DETERIORATING
REPORT CARD FOR Alabama's INFRASTRUCTURE
ASCE
infrastructurereportcard.org
Sample


OUR
REPORT CARD FOR ALABAMA'S INFRASTRUCTURE
2015
GRADES
Aviation
Bridges
Dams
Drinking Water
Energy
Inland Waterways
Ports
Rail
Roads
Transit
Waste & Storm Water
ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS
INFRASTRUCTUREREPORTCARD.COM/ALABAMA


ALABAMA GRADE SUMMARIES
Sample

2013 REPORT CARD FOR AMERICA'S INFRASTRUCTURE

Aviation	D
Bridges	C+ ↑
Dams	D
Drinking Water	D ↑
Energy	D+
Hazardous Waste	D
Inland Waterways	D-
Levees	D-
Ports	C
Public Parks and Recreation	C-
Rail	C+ ↑
Roads	D ↑
Schools	D
Solid Waste	B- ↑
Transit	D
Wastewater	D ↑
America's Cumulative G.P.A.	D+ ↑

Why did some sectors improve, while others continued to fall behind?

The answer is simple: in sectors where investment was made – by both the public and private sectors - and innovative solutions pursued, the grades rose.

A = Exceptional
B = Good
C = Mediocre
D = Poor
F = Failing

Each category was evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation

It is possible to increase the grades but we need to keep the momentum going to keep seeing improvement.

D+

AMERICA'S CUMULATIVE INFRASTRUCTURE G.P.A.

CUMULATIVE INFRASTRUCTURE NEEDS BY SYSTEM BASED ON CURRENT TRENDS EXTENDED TO 2020

DOLLARS IN $2010 BILLIONS

ESTIMATED INVESTMENT NEEDED BY 2020:

$3.6 TRILLION

Infrastructure System	Total Needs	Estimated Funding	FUNDING GAP
Surface Transportation [1]	$1,723	$877	$846
Water/Wastewater Infrastructure [1]	$126	$42	$84
Electricity [1]	$736	$629	$107
Airports [1,2]	$134	$95	$39
Inland Waterways & Marine Ports [1]	$30	$14	$16
Dams [3]	$21	$6	$15
Hazardous & Solid Waste [4]	$56	$10	$46
Levees [5]	$80	$8	$72
Public Parks & Recreation [6]	$238	$134	$104
Rail [7]	$100	$89	$11
Schools [8]	$391	$120	$271
TOTALS	$3,635	$2,024	$1,611
YEARLY INVESTMENT NEEDED	$454	$253	$201

From the ASCE series of economic studies: "Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Growth"

Infrastructure's Economic Impact

From the ASCE series of economic studies:
"Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Growth"

3 Key Solutions to Raise the Grades

BOLD LEADERSHIP AND A COMPELLING VISION

- STRONG LEADERSHIP AT ALL LEVELS OF GOVERNMENT AND THE PRIVATE SECTOR.

PROMOTE SUSTAINABILITY AND RESILIENCE

- SUSTAINABILITY, RESILIENCY, AND ONGOING MAINTENANCE BOTH STRUCTURAL AND NON-STRUCTURAL METHODS MUST BE APPLIED TO MEET CHALLENGES

AGREE ON HOW TO PRIORITIZE AND FUND STRATEGIC NEW INVESTMENTS IN INFRASTRUCTUREA

- INSTILL BETTER DISCIPLINE FOR SETTING PRIORITIES AND FOCUSING FUNDING TO SOLVE THE MOST PRESSING PROBLEMS.

The 21st Century VISION for America's Infrastructure

In the 21st century, we see an America that thrives because of high quality infrastructure.

INFRASTRUCTURE IS THE FOUNDATION THAT CONNECTS THE NATION'S BUSINESSES, COMMUNITIES, AND PEOPLE, DRIVING OUR ECONOMY AND IMPROVING OUR QUALITY OF LIFE.

For the U.S. economy to be the most competitive in the world, we need a first class infrastructure system — transport systems that move people and goods efficiently and at reasonable cost by land, water, and air; transmission systems that deliver reliable, low-cost power from a wide range of energy sources; and water systems that drive industrial processes as well as the daily functions in our homes.

Yet today, our infrastructure systems are failing to keep pace with the current and expanding needs, and investment in infrastructure is faltering.

Courtesy of Flickr/Corey Leopold

Grades

A - EXCEPTIONAL: FIT FOR THE FUTURE

In excellent condition, new or recently rehabilitated, and meets capacity needs for the future. Facilities meet modern standards for functionality and resilient to withstand most disasters and severe weather events.

B - GOOD: ADEQUATE FOR NOW

In good to excellent condition; some elements show signs of general deterioration. Safe and reliable with minimal capacity issues and minimal risk.

C - MEDIOCRE: REQUIRES ATTENTION

In fair to good condition; shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.

D - POOR: AT RISK

In poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.

F - FAILING/CRITICAL: UNFIT FOR PURPOSE

In unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

Report Card Criteria for Grades

- **Capacity**

  Meet current and future demands.

- **Condition**

  Existing or near future physical condition.

- **Funding**

  Current level of funding compared to the estimated need.

- **Future Need**

  Cost to improve and if future funding will be able to meet the need.

- **Operation and Maintenance**

  Ability to operate and maintain and compliance with government regs.

- **Public Safety**

  Extent jeopardized by the condition and the consequences of failure.

- **Resilience**

  Resist multi-hazard threats & incidents, quickly recover & reconstitute critical services with minimum damage to the public, economy, and national security.

- **Innovation**

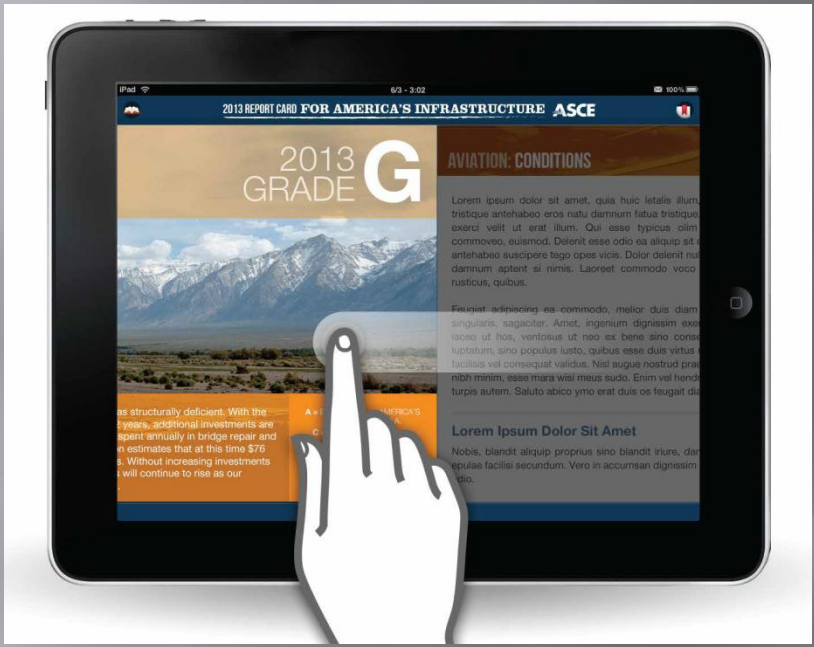
  Strategic use of innovative techniques and delivery methods.

Research & Grading Process

- **Review and analyze**
  - data sources, surveys, and reports
  - identify the scope and condition
  - budgeted expenditures for maintenance & replacements
- **Identify** investment needed to upgrade to meet current & future needs
- **Interview** stakeholders and industry leaders
- **Examine** current trends and developments
- **Develop** a summary report citing
  - Criteria and trends
  - Progress from previous Report Card
  - Consequences of inaction
- **Establish** a grading framework based on past grades using letter-grade scale

The Report Card – Three Ways

1



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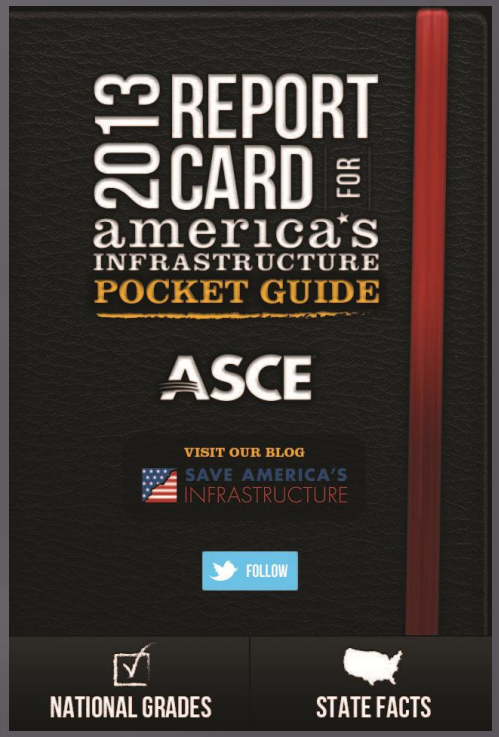

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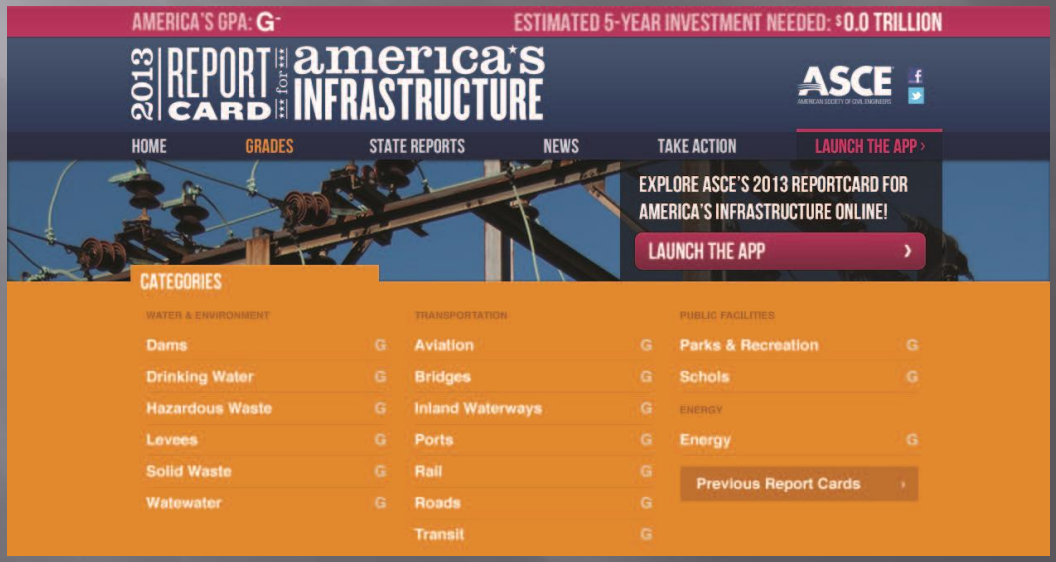
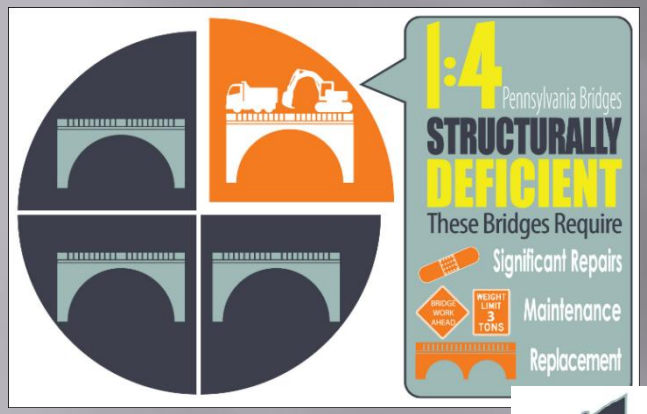
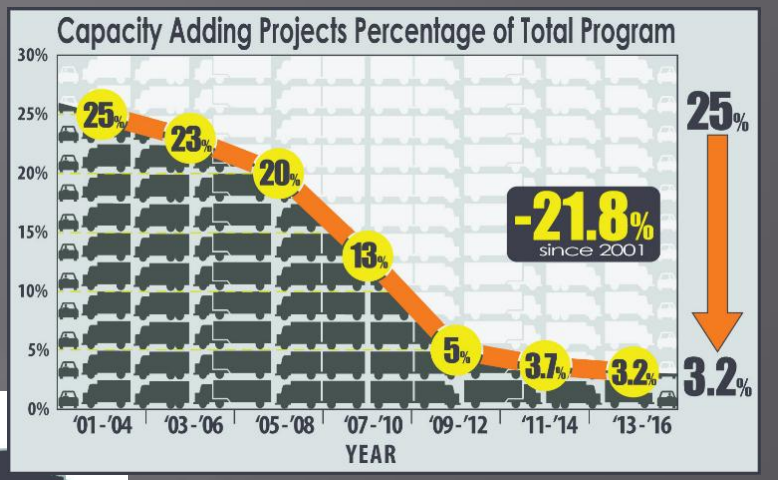
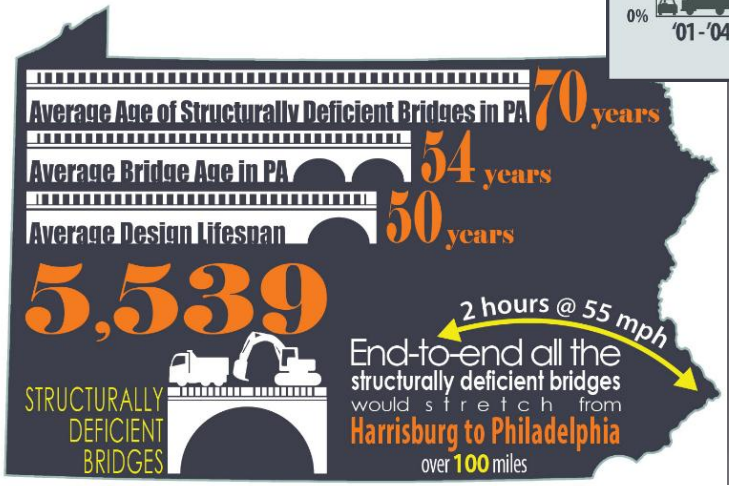
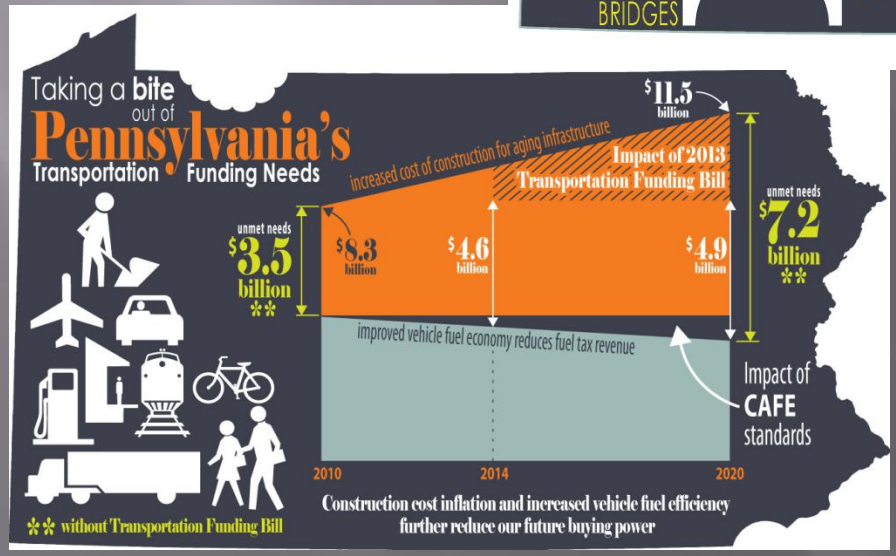


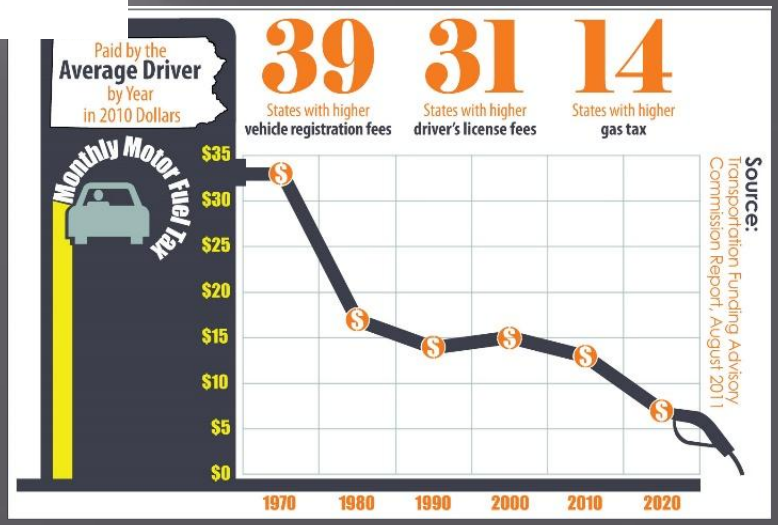
Examples


1:4
Pennsylvania Bridges
STRUCTURALLY DEFICIENT
These Bridges Require
Significant Repairs
Maintenance
Replacement
BRIDGE WORK AHEAD
WEIGHT LIMIT 3 TONS


Capacity Adding Projects Percentage of Total Program
30%
25%
20%
15%
10%
5%
0%
25%
23%
20%
13%
5%
3.7%
3.2%
-21.8% since 2001
25%
3.2%
'01-'04
'03-'06
'05-'08
'07-'10
'09-'12
'11-'14
'13-'16
YEAR


Average Age of Structurally Deficient Bridges in PA 70 years
Average Bridge Age in PA 54 years
Average Design Lifespan 50 years
5,539
STRUCTURALLY DEFICIENT BRIDGES
2 hours @ 55 mph
End-to-end all the structurally deficient bridges would stretch from Harrisburg to Philadelphia over 100 miles


Taking a bite out of Pennsylvania's Transportation Funding Needs
unmet needs $3.5 billion **
$8.3 billion
$4.6 billion
$4.9 billion
$11.5 billion
increased cost of construction for aging infrastructure
Impact of 2013 Transportation Funding Bill
unmet needs $7.2 billion **
improved vehicle fuel economy reduces fuel tax revenue
Impact of CAFE standards
2010
2014
2020
** without Transportation Funding Bill
Construction cost inflation and increased vehicle fuel efficiency further reduce our future buying power


Paid by the Average Driver by Year in 2010 Dollars
39 States with higher vehicle registration fees
31 States with higher driver's license fees
14 States with higher gas tax
Monthly Motor Fuel Tax
$35
$30
$25
$20
$15
$10
$5
$0
1970
1980
1990
2000
2010
2020
Source: Transportation Funding Advisory Commission Report, August 2011

What can you do?

- Participate in the Alabama Infrastructure Report Card Release - 2015
- Download the Report Card App
- Share the Report Card information with others
- Connect with social media: FaceBook, Twitter
- Reach out to members of congress through: ASCE Key Contacts, Fixthetrustfund.org

Want more information?

Alabama Report Card Effort

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