



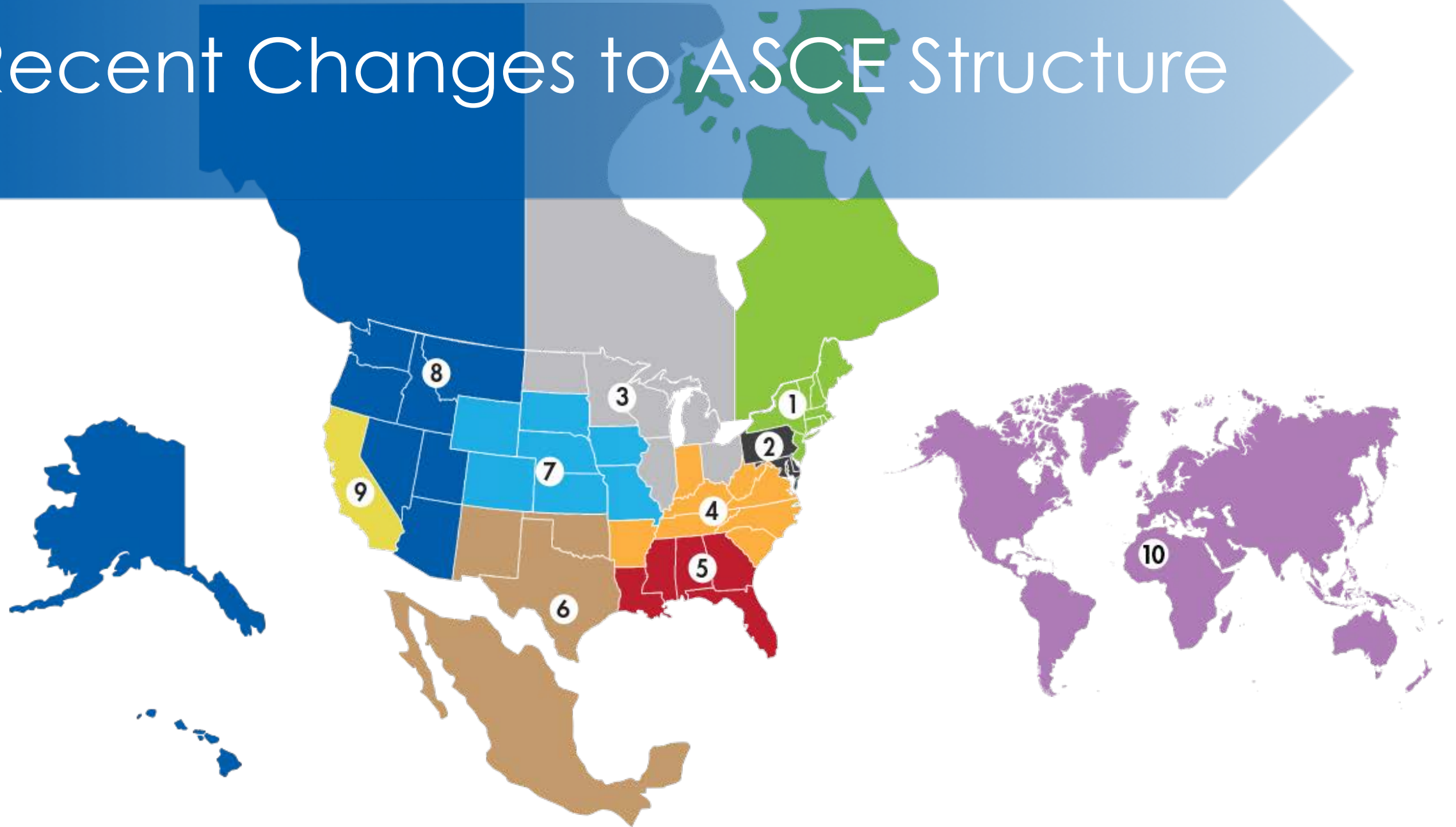
Ethics in Engineering

Symposium Infrastructure in the Border

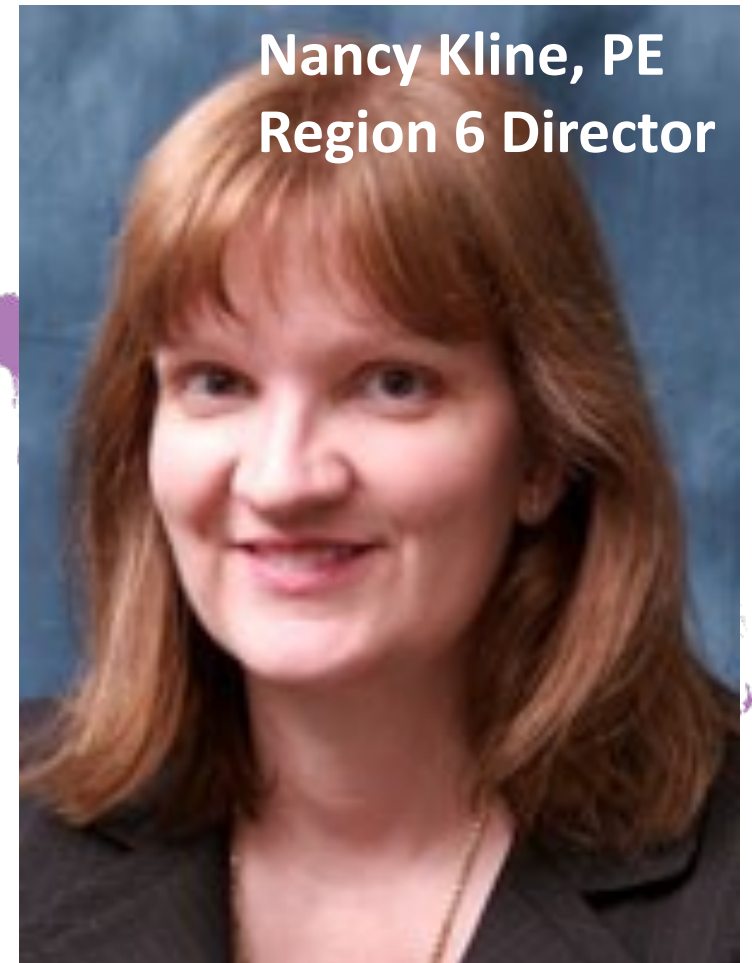
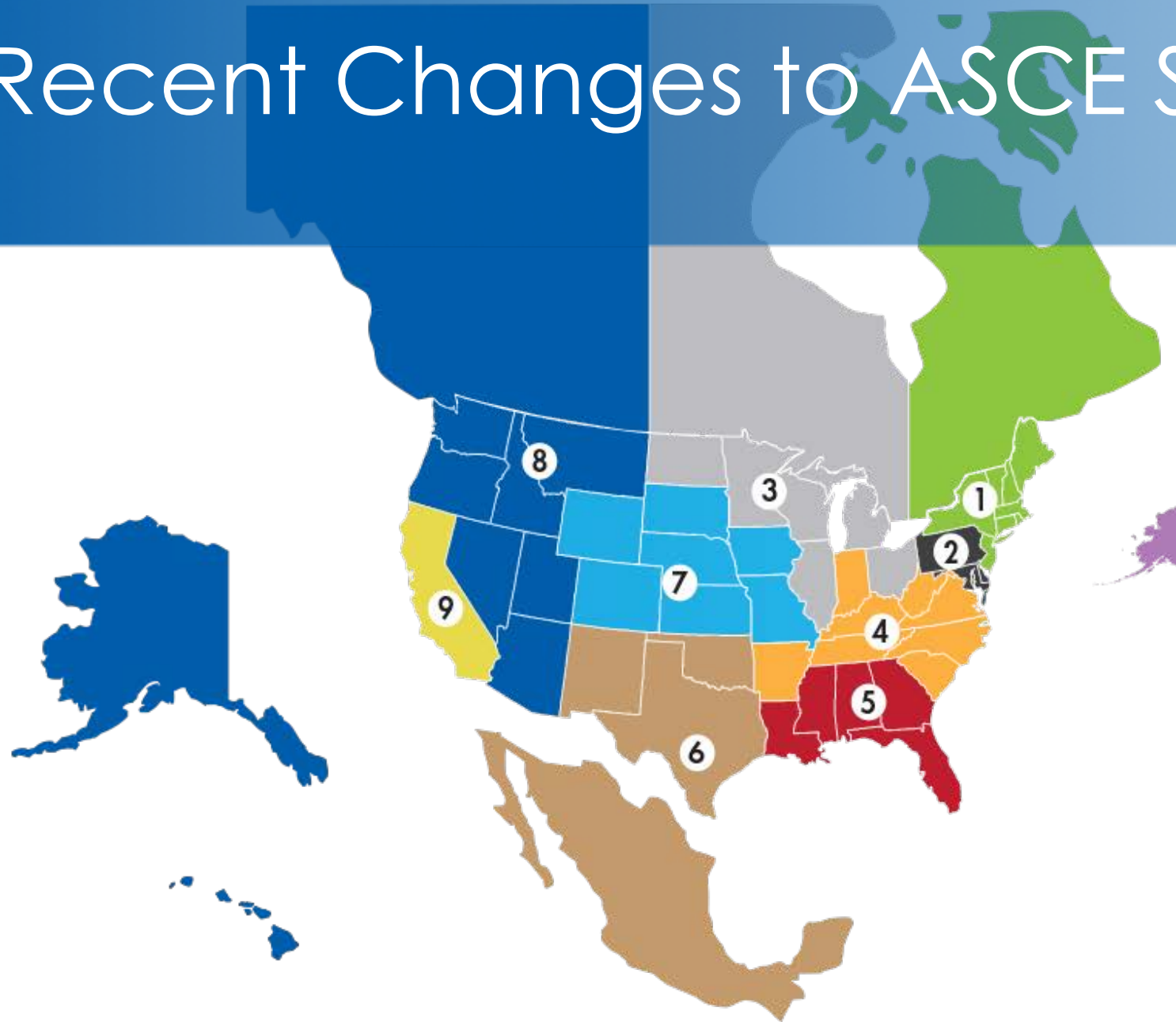
Norma Jean Mattei, Ph.D., P.E., F.SEI, F.ASCE
ASCE President



Recent Changes to ASCE Structure



Recent Changes to ASCE Structure

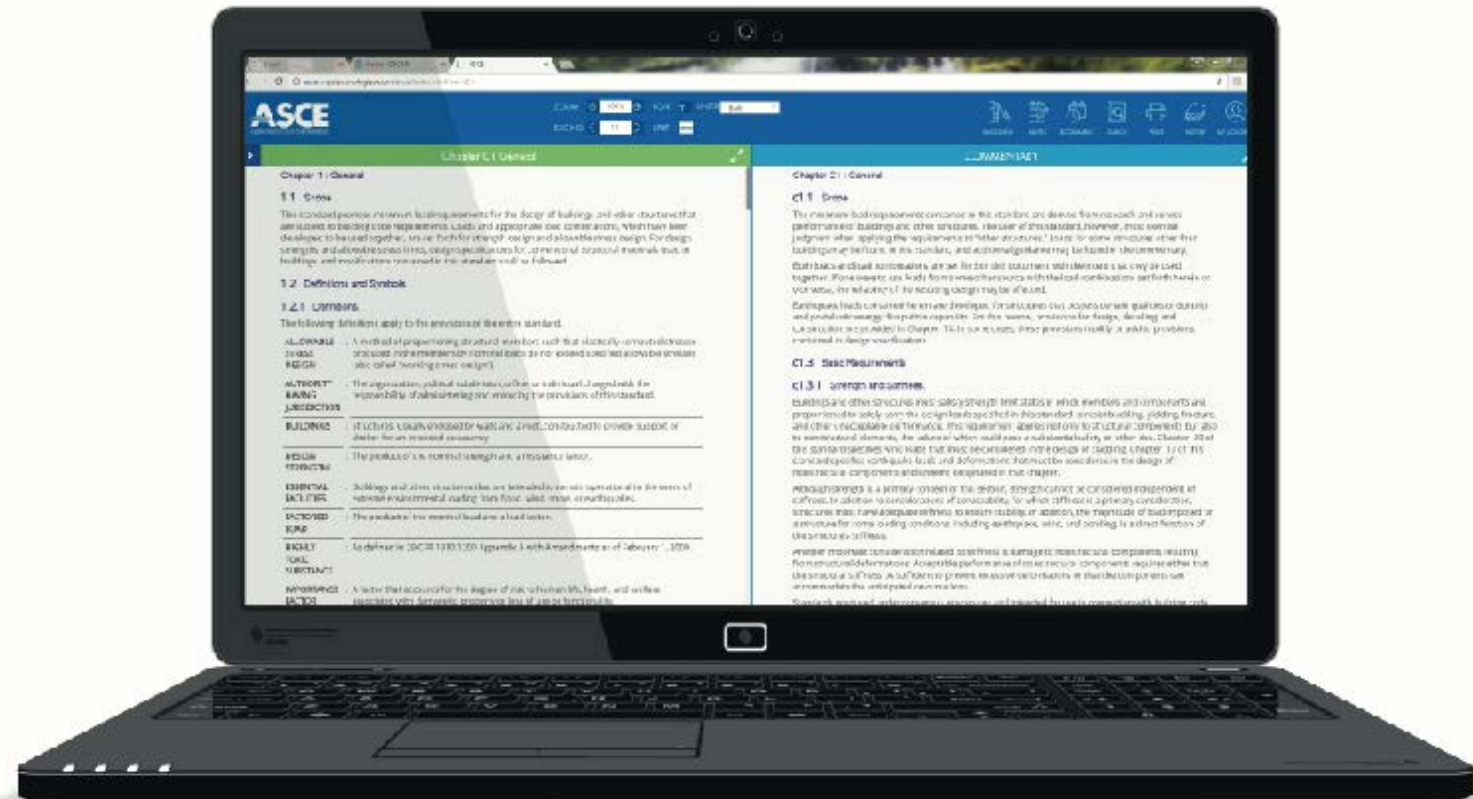


ASCE 7 Online

*A faster, easier way to work with
Standard ASCE 7*

asce7.online

- Side-by-side provisions & commentary
- Digital access to ASCE 7-10 and 7-16
- Real-time updates
- Redlining to track changes
- Corporate/personal note features



ASCE 7 Hazard Tool

One Site. Precise Data. Fast Results

asce7hazardtool.online

- Look up of key design parameters specified by ASCE 7-10 and 7-16
- Get the 7 environmental hazard data: wind, seismic, ice, rain, snow, flood, and tsunami
- Generate and download PDF reports



Access Engineering: Member Value

The screenshot displays the Access Engineering website interface. At the top, the logo "ACCESS Engineering" is accompanied by the tagline "Authoritative content. Immediate solutions." A search bar with the placeholder "Search Access Engineering" and a "GO" button is located in the top right, with a link to "Advanced Search" below it. A navigation menu includes links for HOME, SUBJECTS, INDUSTRIES, TITLES (A-Z), and CURRICULUM MAPS. On the right, there are buttons for "FREE TRIAL" and "SIGN IN".

The main content area is titled "Civil Engineering" and features a row of book covers with "Contents" links: "Design of Wood Structures, 7th Edition", "Civil Engineering All-In-One PE Exam Guide, 3rd Edition", and "Standard Handbook for Civil Engineers, 5th Edition".

Below this, the "Curriculum Maps" section lists "Materials Science and Engineering (MSE)" and "Strength of Materials". The "Tools & Media" section includes links for "Calculators", "DataVis - Material Properties", "Graphs", "Tutorials", and "Videos". A "Books" section is partially visible at the bottom left.

On the right side, the "Featured Content" section highlights three items, each with a "Now Available!" banner: "DataVis Material Properties", "MASONRY Construction Methods", and "BRIDGE ENGINEERING".

- Connect to items with multidisciplinary professional engineering content

Engineering Ethics

Engineers are consistently rated by the US public among the **most trusted** and ethical professions, second only to medical professionals

-Gallup poll, 2016

Nurses	84	3	13
Pharmacists	67	8	26
Medical doctors	65	7	29
Engineers	65	5	29
Dentists	59	7	34
Police officers	58	13	29
College teachers	47	18	32
Clergy	44	13	39
Chiropractors	38	13	45
Psychiatrists	38	12	45
Bankers	24	30	46
Journalists	23	41	34
Lawyers	18	37	45
State governors	18	35	45
Business executives	17	32	50
HMO managers	12	31	48
Senators	12	50	37
Stockbrokers	12	39	46
Advertising practitioners	11	40	46
Insurance salespeople	11	38	51
Car salespeople	9	46	45
Members of Congress	8	59	31

History: Engineering Ethics

Professional
Engineering
Societies
Formed

1800s

First
engineering
code of
ethics

1910s

Rapid
expansion of
state licensure
for engineers

1920-
30s

ECPD adopts
fundamental
principles of
ethics

1960s

Professional
societies amend
codes to reflect
service to public

1970s

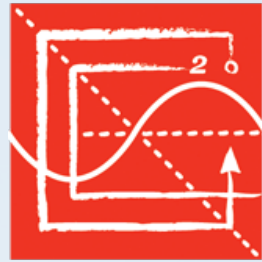
Licensure: Protects the Public



US Engineering Licensure

CRITERIA FOR PROFESSIONAL LICENSURE

- Education
 - Bachelors degree from ABET accredited program
- Examination
 - Fundamentals of Engineering (FE) exam
 - Principles and Practice of Engineering (PE)
- Experience
 - Four years progressive engineering experience




NCEES

- US Engineering Licensure
 - Legally required for professional practice
 - Regulated by each state/territory
 - Self-regulates and has legally required code of conduct
- NCEES, established 1920, provides services to licensees
 - Creates exams & model law, advances comity
- ABET accredits engineering programs (EAC)
 - Was the Engineer's Council of Professional Development (1932)
 - Originally to vet engineering programs for licensing boards

ASCE's Code of Ethics: Canon 8

Engineers shall...**treat all persons fairly**...without regard to gender or gender identity, race, national origin, ethnicity, religion, age, sexual orientation, disability, political affiliation, or family, marital, or economic status.

The background of the slide is an aerial photograph of the Gardens by the Bay in Singapore. The image shows the Esplanade - Theatres on the Bay, a large, curved, ribbed structure, and the Supertree Grove, a series of tall, artificial trees with green canopies. The area is surrounded by water and other green spaces.

ASCE's Code of Ethics: Canon 7

Engineers shall continue their **professional development** throughout their careers, and shall provide opportunities ... for those engineers under their **supervision**.



ASCE's Code of Ethics: Canon 6

Engineers shall act ... to uphold and enhance the honor, integrity, and dignity of the engineering profession and shall act with zero tolerance for bribery, fraud, and corruption.



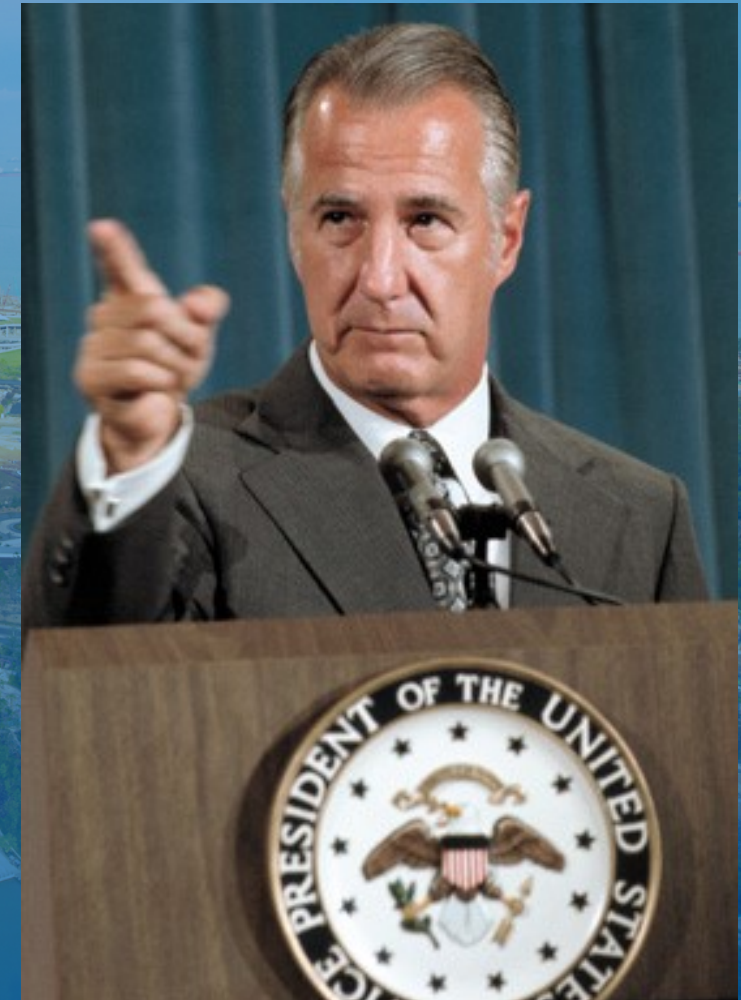
ASCE's Code of Ethics: Canon 5

Engineers shall build their professional reputation on the **merit** of their services and shall not **compete unfairly** with others.

The background of the slide is an aerial photograph of a coastal city. In the foreground, there is a large, modern architectural structure with a curved, ribbed roof, possibly a stadium or a convention center. To the right of this structure is a park area with several tall, thin, tree-like structures. In the background, there is a large body of water with many ships, and a city skyline is visible on the left side. The sky is blue with some clouds.

Canons 5 & 6

- In 1973, US VP Spiro Agnew resigns from office
 - charges of accepting kickbacks while Governor of Maryland
- Many engineering firms paid Agnew a % of public works fees
 - engineers claimed they would be unable to do business in Maryland if they did not participate



ASCE's Code of Ethics: Canon 4

Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.

The background of the slide is an aerial photograph of a coastal city. In the foreground, there is a large, modern architectural structure with a curved, ribbed roof, possibly a conservatory or a large public building. To the right of this structure is a park area with several tall, thin, tree-like structures. In the background, there is a large body of water with many ships, and a city skyline is visible on the left side. The entire image has a blue tint.

ASCE's Code of Ethics: Canon 3

Engineers shall issue **public statements only** in an **objective and truthful manner.**

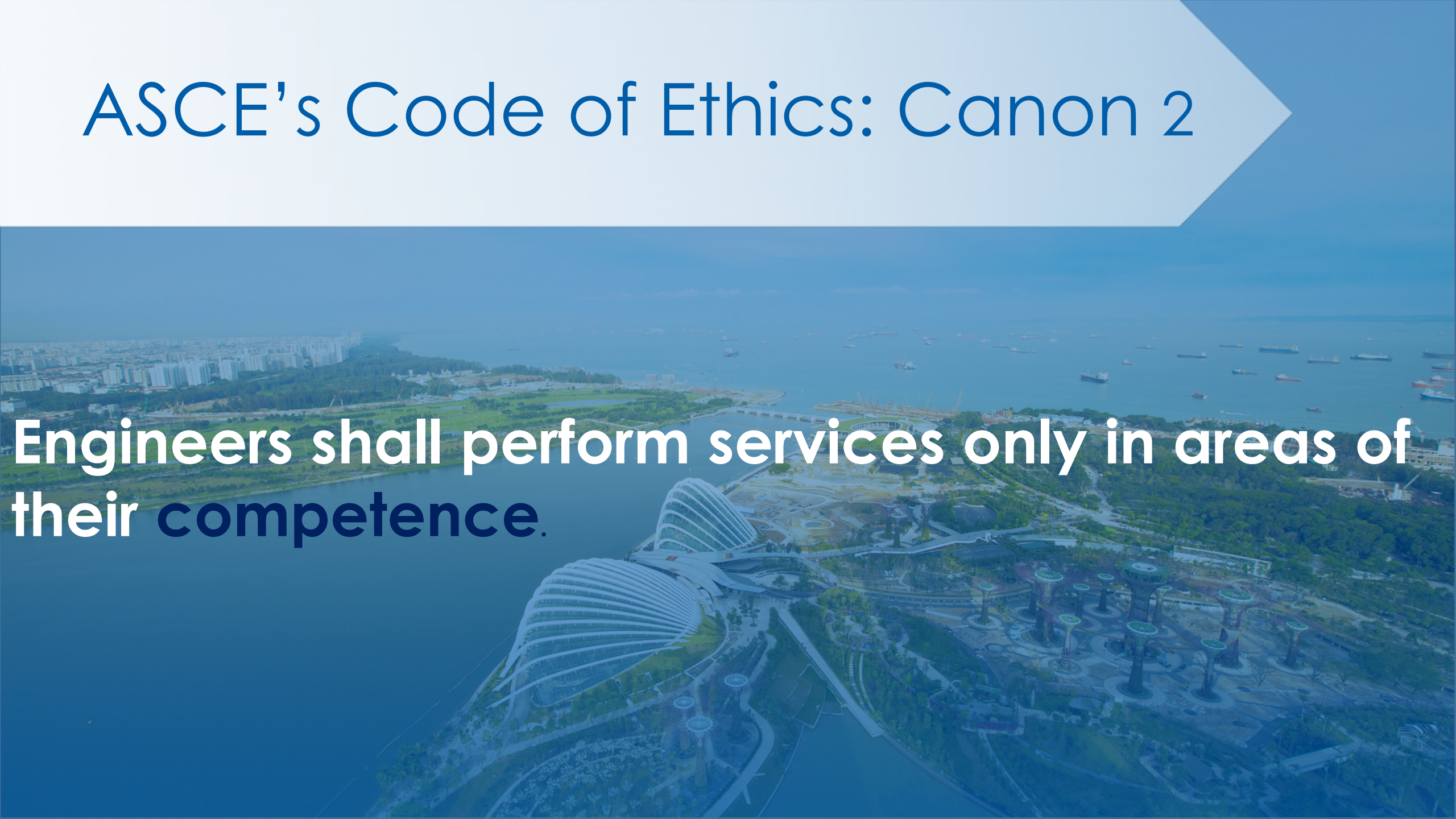
The background of the slide is an aerial photograph of Singapore's Gardens by the Bay. In the foreground, the Esplanade - Theatres on the Bay is visible, characterized by its two large, ribbed, dome-like structures. To the right, the Supertree Grove features several tall, artificial trees with green canopies. The background shows a wide harbor with many ships and a city skyline under a clear sky.

Canon 3: L'Aquila Earthquake



ASCE's Code of Ethics: Canon 2

Engineers shall perform services only in areas of their **competence**.



ASCE's Code of Ethics: Canon 1

Engineers shall hold paramount the **safety, health and welfare of the public** and shall strive to comply with the principles of **sustainable development** in the performance of their professional duties.

The background of the slide is an aerial photograph of the Gardens by the Bay in Singapore. The image shows the Esplanade - Theatres on the Bay, a large, curved, white building with a ribbed facade, and the Supertree Grove, a series of tall, artificial trees with green canopies. The gardens are situated along the waterfront, with a body of water visible in the foreground. The overall scene is a mix of modern architecture and lush greenery.

Canon 1: Citicorp Center



Sustainable Infrastructure



Rating Sustainability: Envision

Photo: San Diego International Airport

**San Diego International Airport Green Build
Project : Envision Platinum**



2017

INFRASTRUCTURE REPORT CARD

What the Grades Mean



MEDIOCRE
Requires attention



EXCEPTIONAL
Fit for the future



POOR
At risk



GOOD
Adequate for now



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

Acueducto de Querétaro





Global Corruption

Cost of Global Corruption

- Cost estimated at US\$ 2.6TR (World Economic Forum)
- US\$ 1TR paid in bribes (World Bank)
- Corruption in construction = US\$ 500B
- ASCE's Engineer's Charter asks individuals to sign on – pledging to combat corruption (Canon 6: zero tolerance)

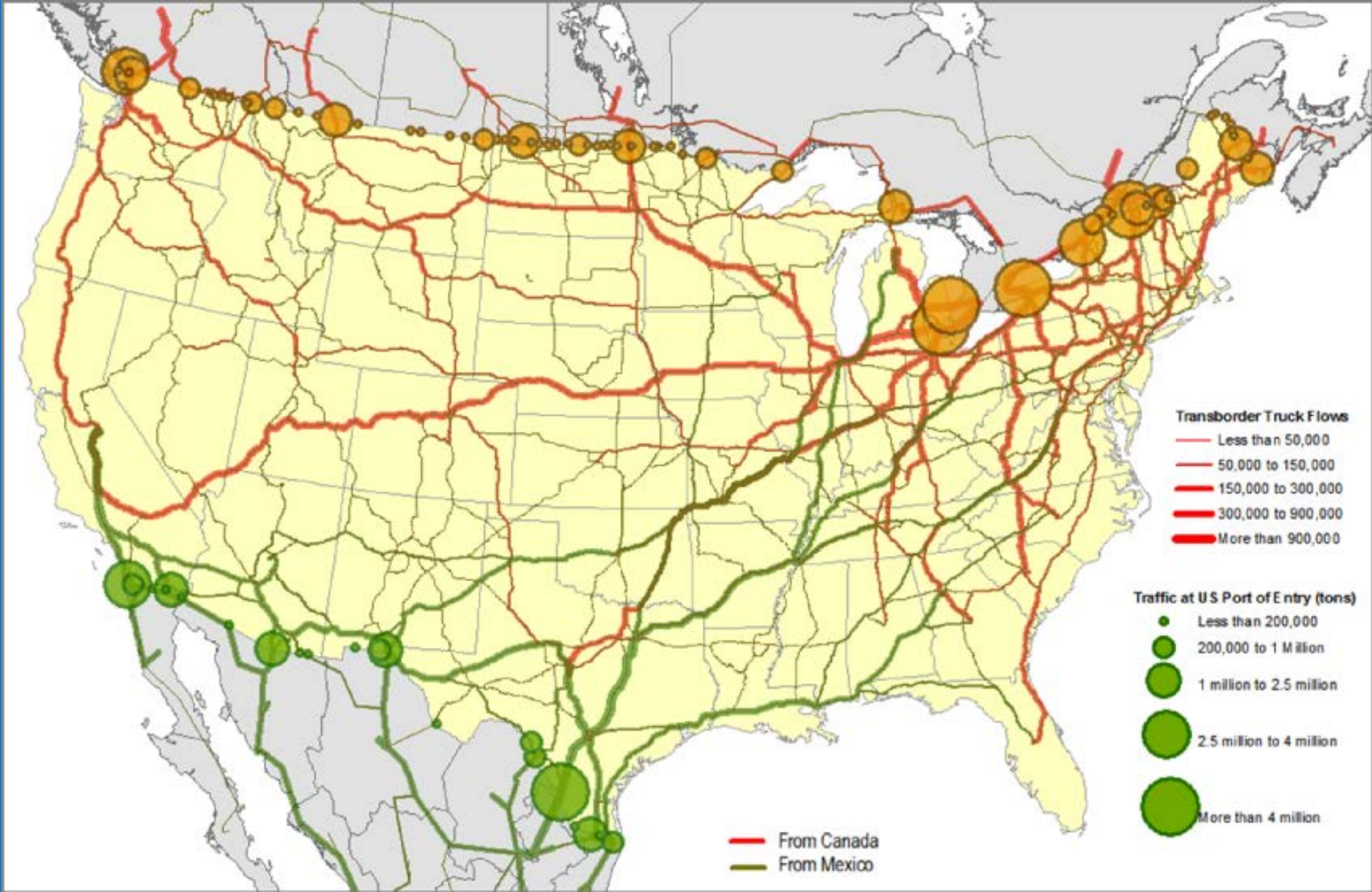
Combating Global Corruption

- United Nations Convention against Corruption (2003)
- ISO 37001 Anti-bribery Management Systems Standard
 - Aids an organization's compliance with relevant legal requirements in all countries
 - Mexico and US were participating countries (of 37)
 - Requires an Anti-Bribery Management System
 - Related to FIDIC's Integrity Management System

Mexico & US: Trading Partners

- US's second-largest export market (after Canada)
- US's third-largest trading partner (after Canada and China)
- Two-way trade in goods and services = >US\$550B
 - Nearly 80% of Mexico's exports go to US
 - 3rd-largest supplier of foreign crude oil to US
 - The largest export market for US refined petroleum products
 - Top US exports = electrical machinery, nuclear equipment, motor vehicle parts, mineral fuels and oils, and plastics
- US stock direct investment in Mexico = US\$101B
- Mexican investment in US = US\$17.6B – the 7th fastest growing investor country

Mexico, Canada & US: Tonnage at Ports of Entry



25 Ports of Entry for surface freight





Sustainable Infrastructure:
Its important!



Thank You!