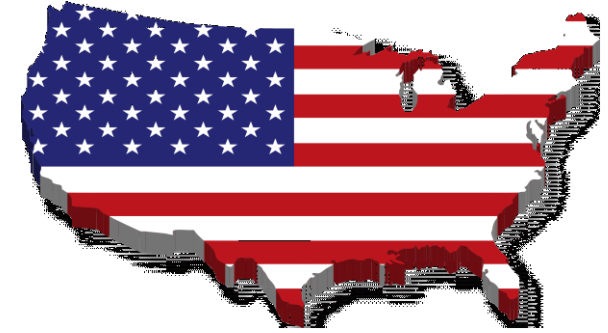


Net Neutrality Powers Energy and Forestalls Climate Change



Climate and Energy Law Symposium
University of San Diego School of Law
Energy and Climate Policy in the Trump Era



Catherine J.K. Sandoval
Associate Professor
Santa Clara University School of Law
November 3, 2017



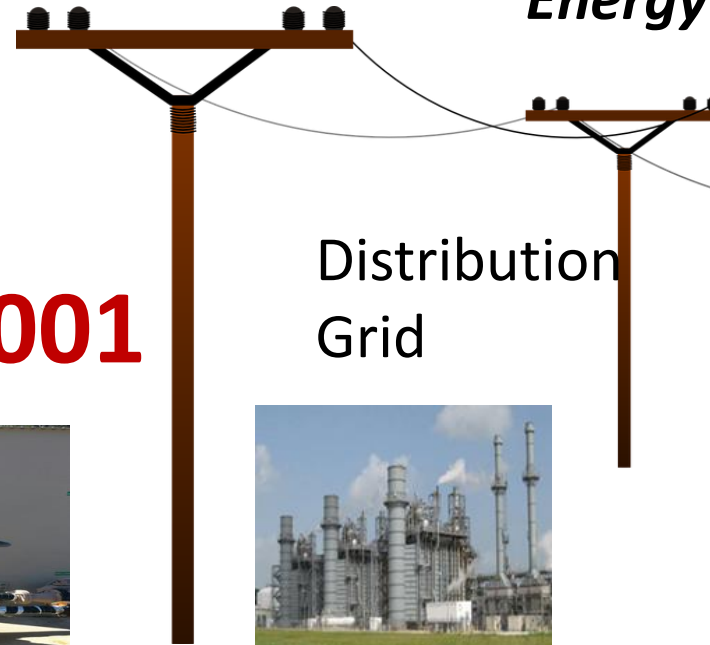
Defend Beyond the Fortress: Critical Infrastructure, Reliability, Safety & the Environment



Energy Sector = Critical Infrastructure

Internet-Enabled Distributed Energy Resources

Critical Infrastructure Designations, 2001



Water Sector = Critical Infrastructure



- **Critical Infrastructure Protection Act of 2001 (Part of USA Patriot Act adopted after Sept. 11, 2001)** defines “critical infrastructure” as a:
- Systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters

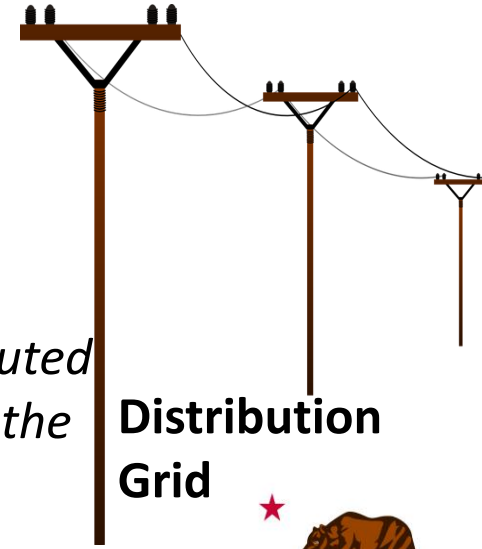
Risk : Electric Reliability & Safety Standards



Transmission Grid



Internet-Enabled Distributed Energy Resources Make the Grid Smart and Increase Reliability and Safety



Distribution Grid



- **Electric Utility (IOU) Duty to Address and Mitigate Risks:**
- CPUC Decision D.14-12-025 requires Electric and Gas Utilities to Address and Mitigate Risks in their General Rate Case Applications and Operation
- CA Public Utility Code 451, 701 Requires IOUs and CPUC Licenses Holders (Certificates of Public Convenience and Necessity) to Manage and Mitigate Risk & Offer Safe, Reliable Service at Just & Reasonable Rates with Adequate Facilities
- California Environmental Standards Require Electric & Gas Corps. to Reduce
- GHG & Black Carbon, Consider & Mitigate Risks such as Sea Level Rise



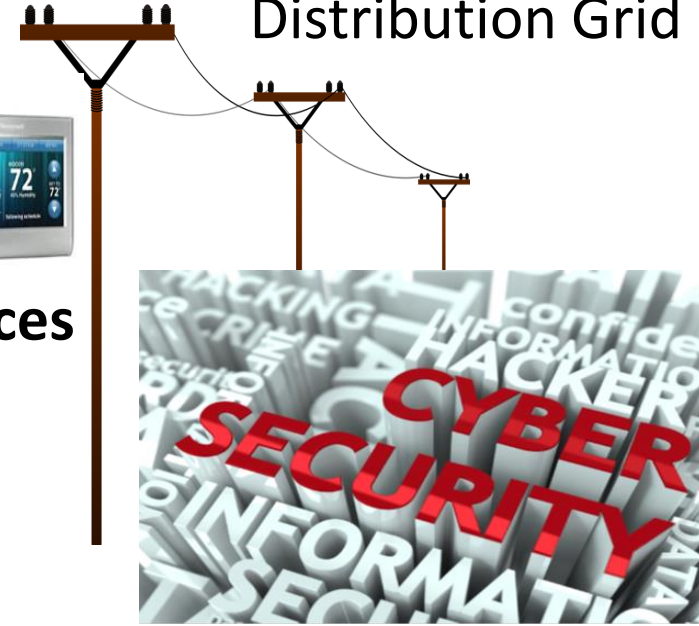
Risk : Electric Reliability and Cybersecurity



Transmission Grid



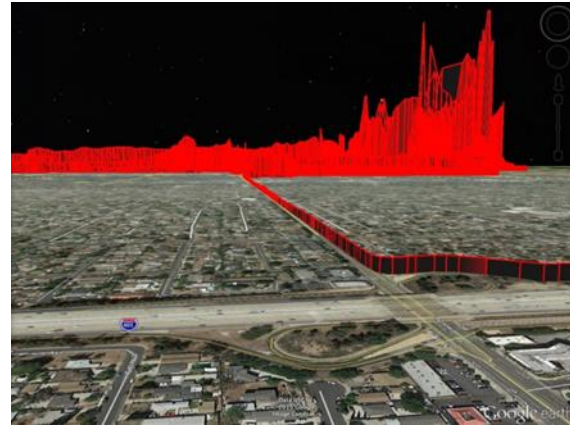
**Energy Resources
Require
Reliability &
Cybersecurity**



- Energy Policy Act (EPA) of 2005 and Electricity Modernization Act of 2005 Require Utilities and Grid Operators to Ensure Grid Reliability
- Electric Reliability Standards Must Incorporate Reliability Requirements for Bulk-power System Facilities, including Cybersecurity Protection

Risk: Natural Gas Safety: Prioritize Public and Employee Safety

Aliso Canyon Natural Gas Storage Field and Thermal Image of Methane Leak, December 2015, Los Angeles, CA



Pipeline Inspection Tools (PIG)

- **Natural Gas Pipeline Safety Act of 2011**, (CA Pub. Util. Code §§ 955 et seq.) Requires gas corporations to develop a plan to “identify and minimize hazards and systemic risk” to protect the public and employees
- **Public Utilities Code Section 961(b)(1) & 963(b)(3):** Requires each gas corporation to develop a plan for the safe and reliable operation of its commission-regulated gas pipeline facility.

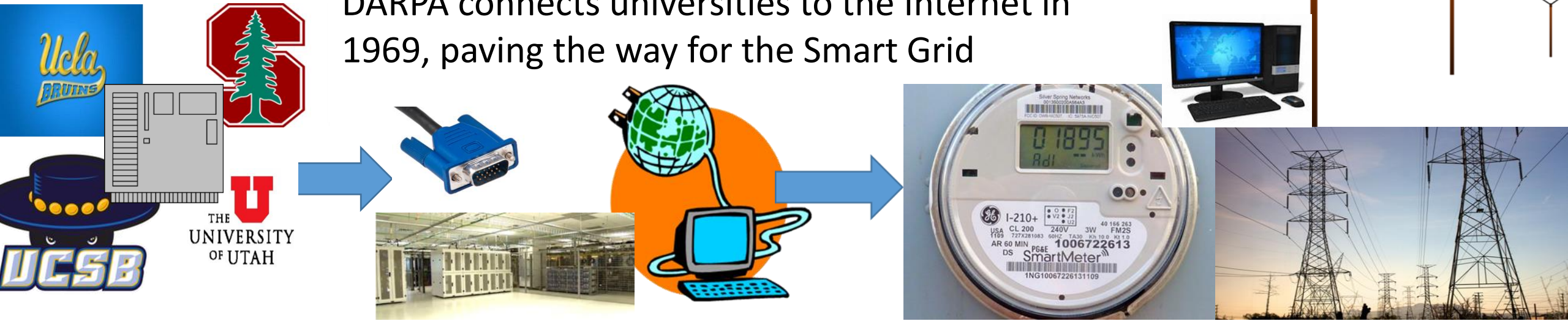
Public and Gas Corporation Employee Safety is the Top Priority



Must Consider Cyber Security Threat from ISP Deals Prioritizing Some Users and Degrading others per FCC 2017 “Internet Freedom” Proposal

Get Smart: The Internet Powers the Electric Grid

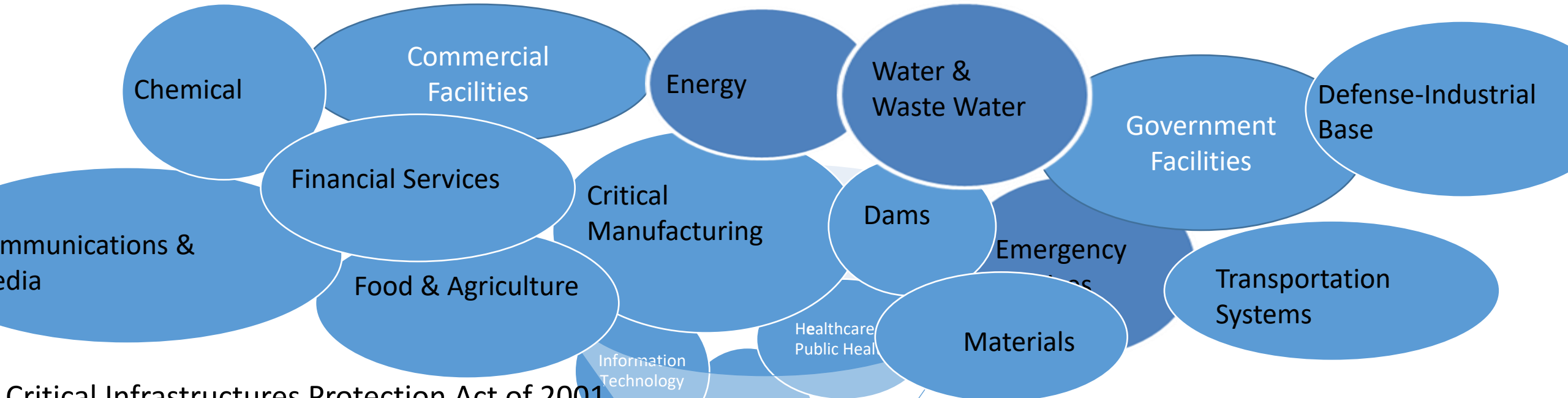
DARPA connects universities to the Internet in 1969, paving the way for the Smart Grid



- Internet Access Expands to More Universities & Research Institutions. Communication with all benefits research and education. (1969-1984). NSFNET allows commercial use & Internet access expands (1984-present)
- **The Energy Independence and Security Act of 2007 (EISA)** signed by President George W. Bush Energy spurred federal “*Smart Grid*” policies to “support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth.”



Critical Infrastructure Sectors designed by Congress Requiring Vigilance to Mitigate Cybersecurity and Physical Risk



Critical Infrastructures Protection Act of 2001, 42 U.S.C. § 5195c(e), defines Critical Infrastructure as: “systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters”

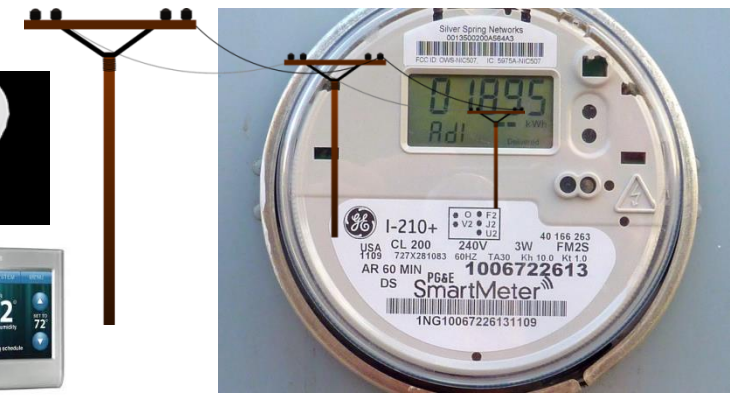


Get Smart: Communications and IT Enable California Energy Action Plan and Loading Order (2003)



California Energy Loading Order:
1) Deploy Negawatts Energy Efficiency & Demand Response

Energy Action Plan Spurs Energy Efficiency & Demand Response Investments to Lower Energy Demand. Generate Negawatts, Save \$, Increase Reliability, & Improve the Environment



Adding intelligence and communication to the distribution grid can detect faults and trigger action to increase reliability, protect safety & lower costs



2) Deploy renewables next



3) Deploy Fossil-fueled Energy Last



Reduce GHG & Black Carbon

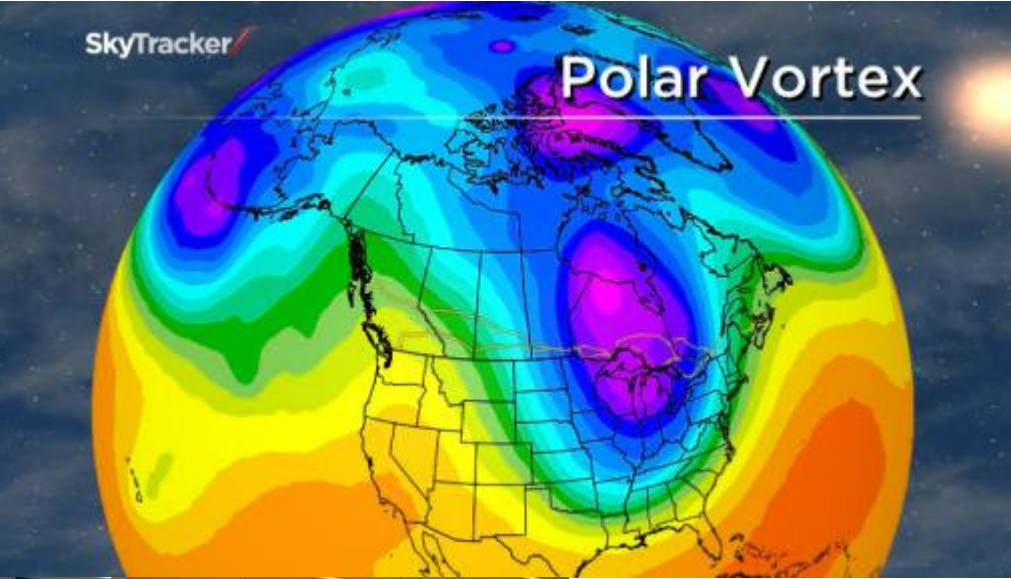


Increase Reliability & Safety, Reduce Costs, Save People & the Planet

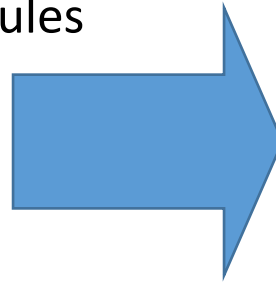


Cf. Clean Power Plan Review, 2017

The Polar Vortex: California is Data-fuel Secure, 2014



Natural Gas rushes east due to high prices & rules



Some California natural gas-fired power plants can't get enough fuel. Coordinate with CAISO & IOUs



CAISO Dispatches Flex Alert, Interruptibles, Demand Reponse, DERS, Wind



Wind saves the day as CAISO coordinates resources and people and things reduce energy demand

Cf. DOE Secretary Perry Sept. 2017 FERC Rulemaking Proposal to pay assets with 90 days of physical fuel on hand for grid reliability Perry proposal excludes virtual power negawatts and renewables

• California avoids blackouts as the Internet enables resource dispatch and demand reduction

Internet-Enabled Technologies Increase Natural Gas Public Safety and Reliability , Reduce Costs & Methane Leaks



PG&E San Bruno Natural Gas Explosion, 2010



Picarro uses the Internet and Google Maps to Detect Methane Leaks

CPUC finds Picarro Increases Leak Detection Efficiency by 1000%



- **Internet-enabled methane leak detection protects public safety, reduces GHG emissions, and saves \$**

- *Cf.* Clean Air Council v. Pruitt, 862 F.3d 1 (D.C. Cir. 2017) (stay of rules requiring fugitive methane detection arbitrary & capricious under APA as parties had opportunity to raise issues in proceeding. Does not hamper EPA from initiating reconsideration of fugitive methane emission leak detection rules). *Consider effectiveness of CA Methane Leak Detection.*



Internet-Enabled Demand Reduction and Resource Dispatch Increase Reliability : San Onofre and Aliso Canyon Unavailable in LA where 26 million people live



San Onofre Nuclear Power Plant Closes in Jan. 2012 after Leak



Grid signals to Consumers and Devices to Reduce Demand



• CPUC, CEC, & CAISO Use Energy Efficiency, Demand Response Distributed Energy Resources Internet-enabled platforms to Avoid Blackouts

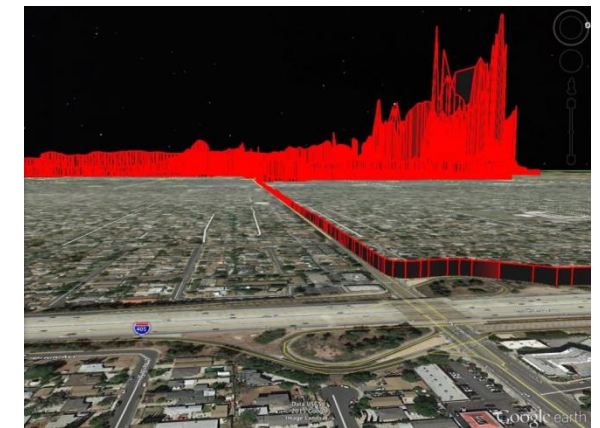


Aliso Canyon Natural Gas Storage Field, Methane Leak, Nov. 2015-Spring 2016 Los Angeles, CA

Natural Gas-fired power plant, potential fuel shortages unless demand is reduced



Thermal Image of Methane Leak at Aliso Canyon, 2015-Q1 2016



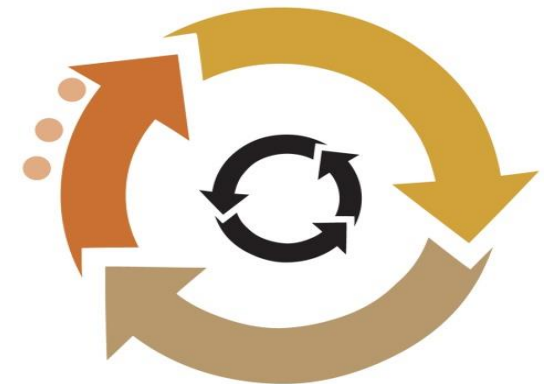
Cf. Sec. Perry 2017 Proposal to Address Electric Reliability by Paying More to Energy Assets with 90-day Physical Fuel Supply

The Internet : Competing Models

- **Great Library of Alexandria, Egypt:**



- The Supreme Court’s 2003 case, *American Library Assn. v. US*, 539 U.S. 194, characterized the Internet as “simply another method for making information available in a school or library,” “no more than a technological extension of the book stack.”
- **Driver of Innovation through Open Platform:**
- In 2014 the D.C. Circuit concludes the Internet drives a “virtuous circle” of innovation enabling people to access, share, and distribute, *Verizon v. F.C.C.*, 740 F.3d 623, 628 (D.C. Cir. 2014)



Internet Models: User Control or ISP Gatekeeper Control?

- **User Control: The Internet is Controlled by Users, Anyone Can Access, Upload, and Share All Legal Content:**



ISP as Internet Editor, Can Speed, Slow, Select Internet Content

Gatekeeper Control: FCC 2017 NPRM Proposes to allow ISPs to Control the Internet:

- ISP deals and network management can speed, slow, or degrade access
 - *USTA v. FCC* , (D.C. Cir. 2016) upholds 2015 FCC bar on such deals.
- D.C. Circuit emphasizes ISPs do not hold themselves out as Internet editors but as providing access to all the Internet has to offer



Internet Gatekeepers Threaten Openness



- *FCC finds in 2010 that ISPs “have both the incentive and ability to engage in paid prioritization”*



- The D.C. Circuit find in its 2014 *Verizon* decision that ISPs “have powerful incentives to accept fees from edge [content] providers, either in return for excluding their competitors or for granting them prioritized access to end users.”



The Gatekeepers Want to Collect Tolls

- Verizon's lawyer argued to the D.C. Circuit in 2014 "but for [the 2010 Open Internet Order] rules we would be exploring commercial arrangements" to be paid to prioritize certain Internet traffic.



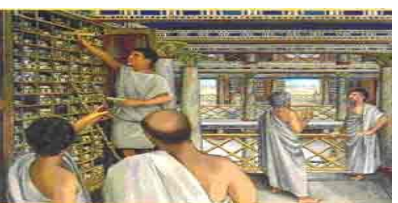
Guardians of the Galaxy: FCC Prohibits Gatekeeper Tolls

- FCC 2015 Open Internet Decision recognizes threat of ISP gatekeeper role.



- *FCC adopted enforceable rules in 2015 prohibiting ISP blocking, throttling, paid priority*

- FCC Rules based on Title II of the Communications Act, Common Carrier Regulation, legal footing recognized by *Verizon v. FCC* and *USTA v. FCC* (D.C. Cir. 2016).



Game of Trolls: Hackers & Trolls Threaten Democracy; Cautionary Tale for Paid Priority & Critical Infrastructure



- 2016 Presidential Election Cycle Increases Internet use for Democratic Debate and Engagement
- *New threats: Congress finds Russia interfered with U.S. elections in 2016, findings incorporated into Countering America's Adversaries Through Sanctions Act* which President Trump signed in 2017



- Interference executed through the Internet: Russians pretend to be U.S. people and organizations

- Other evidence of hacking including into voter databases



- **Oxford University 2017** report on "*Cyber troops*," "government, military or political party teams committed to manipulating public opinion over social media"

- *Identity theft alleged in FCC 2017 NPRM as unauthorized comments are filed using other people's names and addresses to puff up numbers for repealing prohibitions on blocking, throttling, and paid prioritization*



Doom: Battle for Internet Control: FCC Proposes to Allow ISP Priority Deals



- FCC 2017 *Internet Freedom* NPRM proposes to repeal bright-line rules against ISP blocking, throttling, and paid prioritization. and legal basis for enforceable rules that limit ISP gatekeeper exercise of power

FCC 2017 NPRM Eliminates Restraints on ISP Gatekeepers



- FCC 2017 NPRM permits ISP Gatekeepers deals with any entity—*foreign or domestic*—for fast access to the Internet, even if it degrades Internet users including **Critical Infrastructure**



Gatekeeper Priority Deals Threaten Energy Reliability, Safety, Environmental Goals, & Increase Costs



- ISP argues in FCC comment that it would like to be able to make paid prioritization arrangement with *video game distributors* for “isolated arrangements,” without defining what that is or being subject to regulation.

FCC 2017 NPRM Eliminates Restraints on ISP Gatekeepers



- ***Would “isolated priority arrangement” by ISP for video game displace other Internet uses by the subscriber, even if the subscriber doesn’t know of ISP deals?***
- ***Who controls the video game?*** Some U.S. companies have been subject to sanction for dealing with entities they did not realize were fronts for sanctioned persons or organizations
- **Assess Risks to Energy Reliability, Safety, & the Environment.**
- **ISP Priority Deals May Degrade Communication to the Energy Ecosystem including Customers**



Back to the Future: The California Energy Crisis, Misaligned Incentives, Poor Rules, 3rd Party Profit & Market Manipulation Compromised Safety, Reliability, Increased Costs & GHGs & Black Carbon



People Hurt in Car Accidents when Lights Go Out Due to Market Manipulation



Diesel Backup Generators Used During Blackout Emit Black Carbon Which Harms Health and Contributes to Global Warming

FERC rules provide no remedy for lost lives, reliability, safety, and environmental harms



Market Manipulation Cost Californians Lives, \$ Billions, Undermined Electric Reliability and the Environment (2000-2001)

Regulatory Incentives & Rules Misaligned as Parties Profit at Expense of California Safety, Reliability, Environmental Goals . Electric IOUs have Duty to Provide Safe, Reliable Service at Just & Reasonable Rates

Antitrust Law Only Provides Remedies for Harms to Competition. No Antitrust Remedy for Harm to Reliability, Safety, Environmental Harm, Compromise of Critical Infrastructure Function or Increased Risk

Call of Duty: Protect Public Safety, Address Critical Infrastructure Risk

- Energy Critical infrastructure Operators have Duties to Address & Mitigate Risks to Reliability, Safety, Cybersecurity, & Environmental Goals.
- Critical Infrastructure Operators must analyze Paid Priority as a Threat to Reliability, Safety Cybersecurity, and a Material Operational Concern



- Net Neutrality protects Critical Infrastructure, Energy Reliability & Safety, Lowers Costs, and Forestalls Climate Change!



FCC *Ex Parte* Comment Period Open Until Dec. 7, 2017

- See <https://www.fcc.gov/ecfs> for information about the FCC Internet Freedom proceeding, FCC Proceeding 17-108, and comments
- *The question is not just who will control the Internet, the question is who will control American democracy, the economy, and national security?*
- Americans control democracy, the economy, national security, not ISPs!



Thank you!

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