

Next Generation Compliance:

Overview and Opportunity for State Collaboration

NACAA Membership Meeting

April 29, 2015

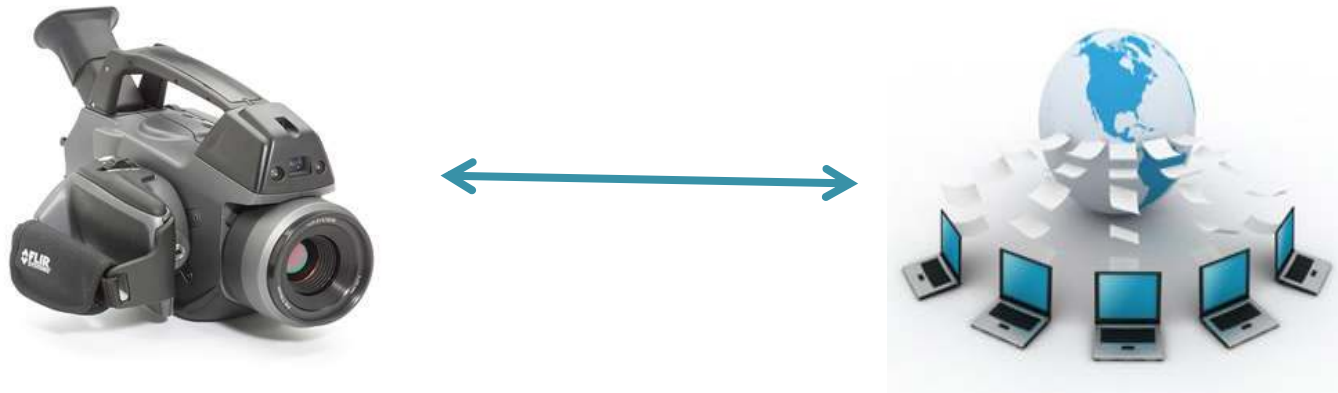
George Wyeth

U.S. EPA, Office of Enforcement and Compliance Assurance

Why Next Gen Compliance

- Drivers
 - Noncompliance
 - Information gaps
 - Government resources for traditional single-facility compliance assistance, inspections, and enforcement
- Opportunity
 - Advanced Monitoring Technology
 - Information Technology
 - Expand use of best and innovative practices

Technology Opportunities



- Advances in these technologies provide the means to:
 - “make the invisible visible”
 - inform industry, government, and the public
 - identify new opportunities to reduce and prevent pollution
 - drive compliance through transparency and accountability



Next Gen is **not**...

- A replacement for enforcement
 - It's a complement: what else can we do to drive compliance and performance?
- Just about traditional enforcement
 - Also about what we can do in rules, permits, implementation
- A requirement for states
 - It's about expanding the tools that EPA and states can use

Benefits to States and Locals

- Improve ability to implement programs with limited resources and ultimately reduce pollution and better protect
- Electronic reporting will reduce burden on states and their regulated entities and provide better data quality.
- Advanced monitoring will give better information on environmental conditions, pollution sources, regulated entity and government performance.

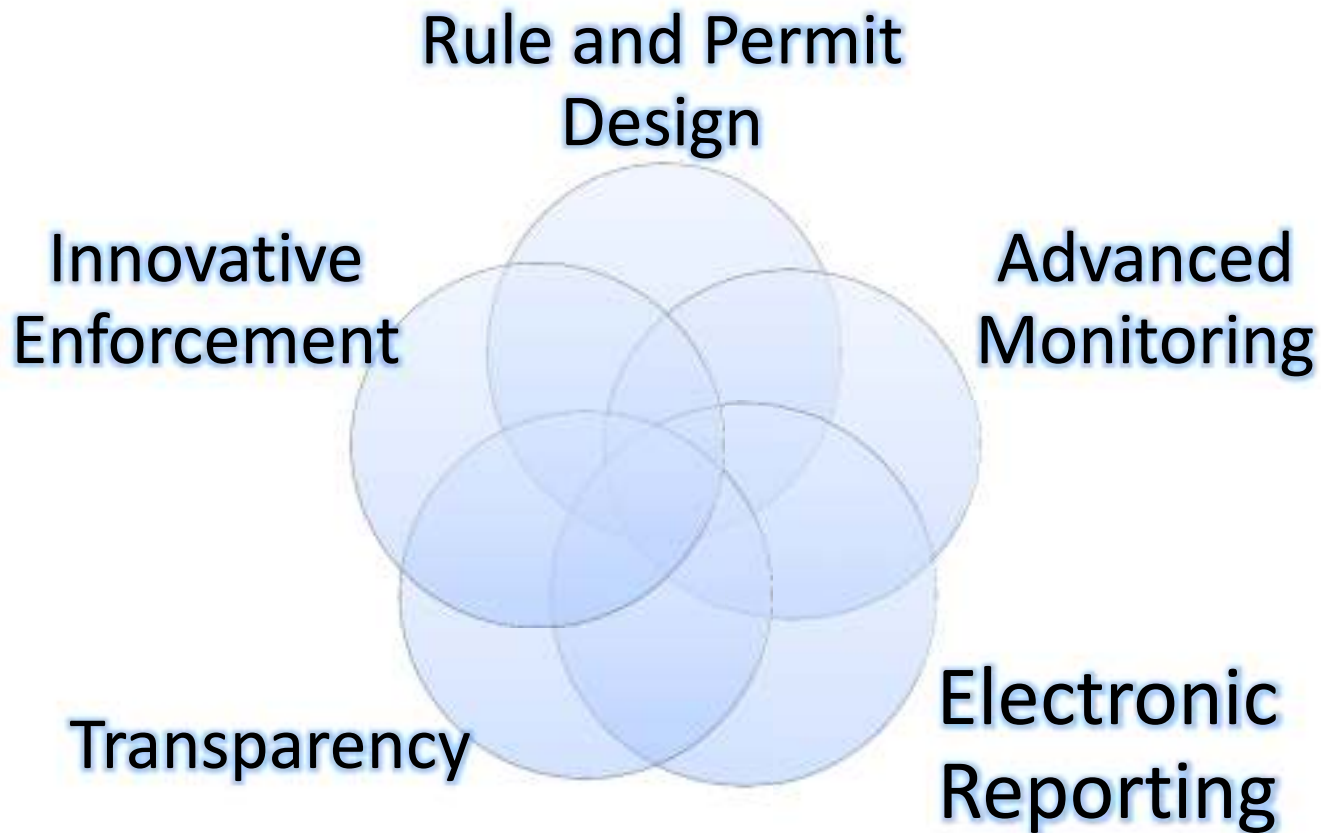
Benefits to States: continued

- Transparency: environmental protection enhanced in a democracy when we share better information
- Future opportunities to innovate:
 - With information on compliance rates, environmental conditions, and pollution sources, could de-emphasize activity measures (e.g., number of inspections) and consider measures related to compliance and pollution.
 - More ability to try new approaches if we have data to evaluate effectiveness of new approaches.

Working Together (we'll come back to this)

- We want to learn from what are you doing already that illustrates Next Gen thinking:
 - EPA will share good examples
- Collaborate with EPA on Next Gen tools and approaches:
 - Demonstration or pilots
 - Perhaps larger evaluation project.

Integrated Next Generation Compliance Components



Next Generation Compliance

Advanced Monitoring Technology

- Find out about pollution in real time
- Facility feedback loops – preventing pollution before it happens
- Fenceline monitoring
- Remote sensing

Infrared Camera



Photo-Ionization Detectors

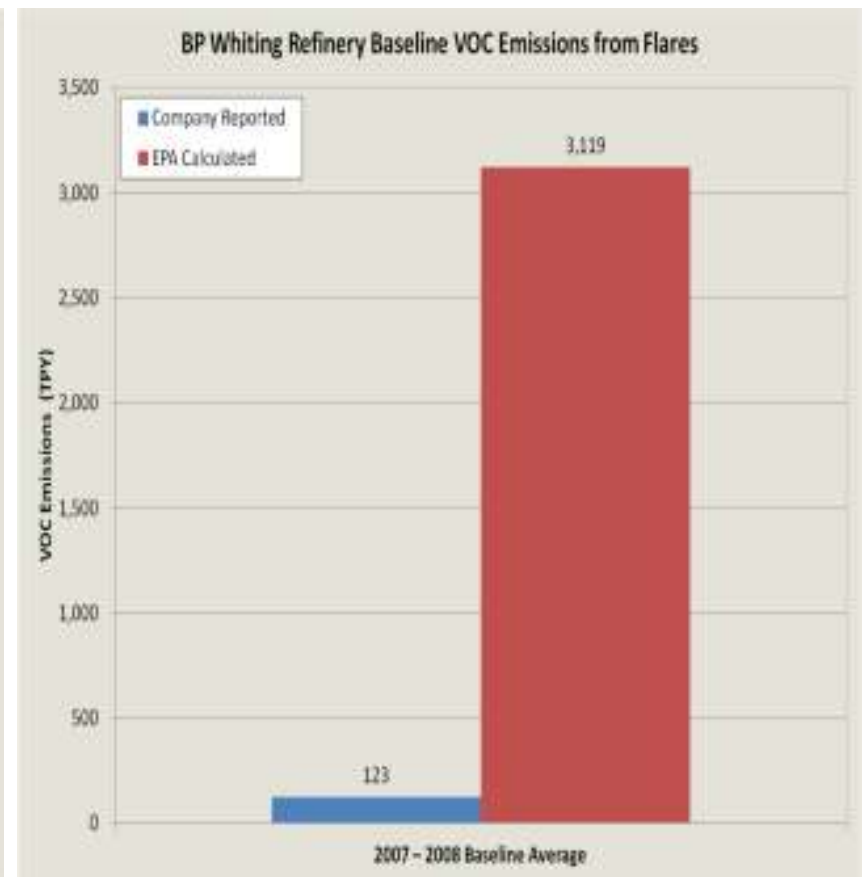
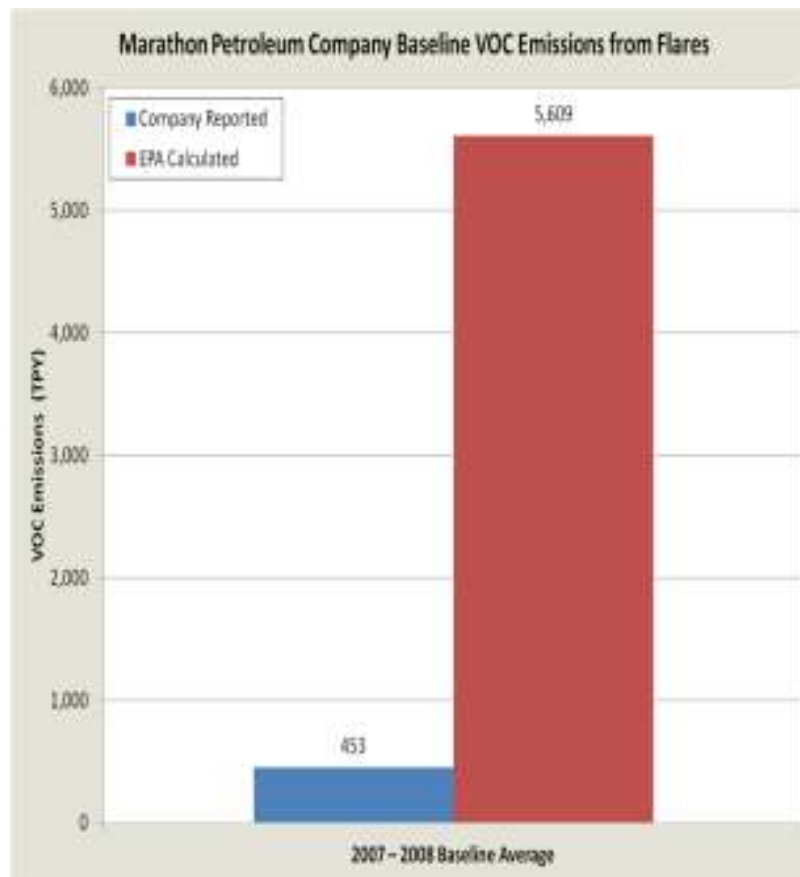


Passive FTIR Open-Path Monitors

VOCs evaporating from a storm drain grate at a bulk gasoline distribution terminal



Example - Advanced monitoring in flare enforcement –
'Estimating v. Knowing' - Marathon and BP Whiting CAA CDs



PFTIR data showed that actual emissions (in red) at Marathon and BP were *10 times and 25 times greater*, respectively, than the companies' best engineering estimates (in blue)

Off-site assessment with *GMAP-REQ*

(Geospatial Measurement of Air Pollution – Remote Emissions Quantification)



- Drive-by Mapping
- Position vehicle in the plume
- Acquire CH₄ and wind data for 20 minutes
- Pull a 30 second canister sample for VOC information

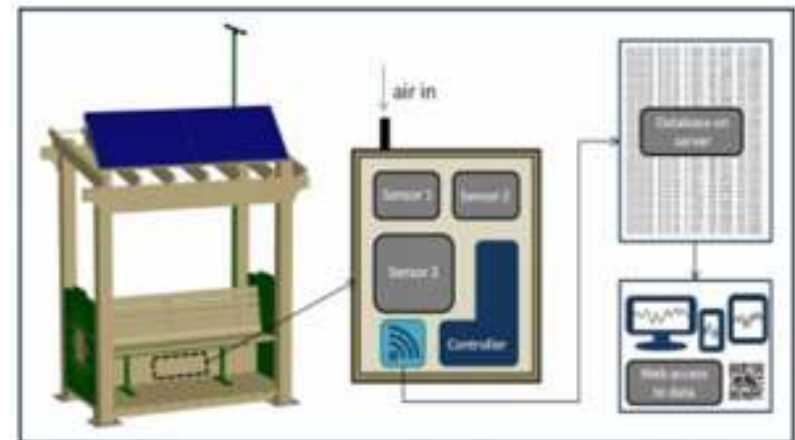
driving path



Spike in CH₄ indicates emission

Village Green Project, Durham NC

- Solar-Powered Park Bench
- Air Sensors Monitor:
 - Air Quality (ozone, particulates, etc.)
 - Weather Information (wind speed, temperature, humidity)
- Real Time Results
 - Uploaded to Website
 - Accessible to communities
 - Available on mobile app



Air-monitoring system incorporated into a park bench.

Building State/Local Advanced Monitoring Capacity

- EPA providing advanced monitoring equipment and training to States
- Recipients chosen based on proposals submitted in Sept. 2014

Village Greens

- Durham, NC
- Oklahoma
- Connecticut
- Philadelphia, PA
- Washington, DC
- Kansas

Infrared Cameras

- R1 - New Hampshire
- R2 - New York, New Jersey
- R3 - West Virginia
- R4 - Kentucky
- R5 – Michigan, Hamilton County, OH
- R6 - New Mexico, Louisiana
- R8 - North Dakota
- R10 - NW Clean Air Agency/Puget Sound Clean Air Agency, WA

Democratization of Air Monitoring



[Link to Example of Citizen Science - AirBeam](#)

Electronic reporting

- System with smart tools to guide user
- Improves quality, reduces error correction costs
- Supports transparency tools
- Ohio NPDES e-reporting success story
- EPA NPDES e-reporting rule proposed July 2013



One example of a private sector e-reporting tool integrated with government regulations (IRS)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 30 2013

DEPUTY ADMINISTRATOR

MEMORANDUM

SUBJECT: E-Reporting Policy Statement for EPA Regulations

FROM: Bob Perciasepe

A handwritten signature in black ink that reads "Bob Perciasepe".

TO: Assistant Administrators
General Counsel
Inspector General
Associate Administrators
Regional Administrators

We are establishing a new Agency-wide policy on e-reporting that specifies in developing new regulations that we will start with the assumption that reporting will be electronic and not paper based. And we will use shared services to do this to the maximum extent possible. This Policy Statement is one important step forward in the Agency's larger E-Enterprise for the Environment Initiative.

WI DNR: Electronic Air Reporting


Air emissions inventory and reporting

Log in to the Switchboard to report your emissions.

Learn how to use the reporting system.


Contact staff for your facility or location.

The deadline for reporting 2012 emissions is [March 1, 2013](#).




Each year facilities throughout the state that emit air pollutants are required to report their emissions to the Department of Natural Resources. These emissions are reported using the Air Reporting System (ARS) which is a web-based software program. Information on ARS, air pollutant chemicals, emission reduction credits in ozone nonattainment areas, where to get help on reporting emissions and data on historical emissions are available using the links below.

Air Reporting System (ARS)




- [2013 reporting schedule and changes](#)
- [Reporting rules \[PDF\]](#)
- [Calculations \[PDF\]](#)
- [Emission fees \[PDF\]](#)
- [Additional information \[PDF\]](#)

Data resources



- [Chemical pollutant information](#)
- [Emission reduction credits](#)
- [Historical information](#)
- [2011 facility emissions spreadsheet \[XLS\]](#)

Help



- [Tutorials](#)
- [Quality assurance messages](#)
- [Contact staff](#)

Contact information

For information on air emissions inventory, contact:

[Ralph Patterson](#)
Air Management Program
608-267-7546

- Allows companies to report annual air emissions on the Internet using web-based software
- Reporter can run a quality assurance report that identifies possible data entry errors

Increased Transparency

- Public accountability to improve facility and government performance
- Well designed transparency can drive change, e.g.,
 - SDWA Consumer Confidence Reports
 - Restaurant health inspection grades

Mailed report on compliance resulted in:

**Total violations:
down 30-44%**

**Health violations:
down 40-57%**

*Benbear & Olmstead, Journal of Environmental Economics and Management (2008).

Proposed Air Rule for Petroleum Refineries

- Require fenceline monitoring at the point where community is impacted
- Public posting provides incentive to keep emissions well below the standard to avoid exceedances



Innovative enforcement

- Use Next Gen tools in enforcement settlements
- Policy announced in January 2015 memo from Assistant Administrator Cynthia Giles (<http://www2.epa.gov/compliance/next-generation-compliance-memorandum-next-gen-civil-enforcement-settlements>)
- Enhance targeting and data analysis to identify and address most serious violations
- New enforcement approaches

Incorporating Next Gen in Settlements

Example - CAA settlement with BP Whiting (Indiana)



- Fence line monitors located in consultation with EPA and community
- Data reported weekly on public web site
- Facility must review data with community at their request

Home

Using the Web Site

Measurement Data

Fixed Station Measurement Data

Open Path Measurement Data

Wind Rose

Information

[Site Locations](#)

Monitoring Equipment

Chemical Information

Glossary

Other

Documents

Contacts

The air monitoring network is shown in the map below. There are four air quality and meteorological monitoring stations shown in white lettering. These stations (which are referred to as "fixed stations") monitor the air for sulfur dioxide, hydrogen sulfide, total reduced sulfur (TRS) compounds, benzene, toluene, pentane, and hexane along with local weather conditions. In addition, adjacent to the fixed stations are four "open path" monitors. Open path monitors send ultra-violet light beams along a path. Chemical compounds are measured over the distance the path covers. The open path monitors are shown in red on the map. The open path monitors measure benzene, toluene, xylenes, carbon disulfide, carbonyl sulfide, and ozone.

[Click here for larger image.](#)



Incorporating Next Gen in Settlements

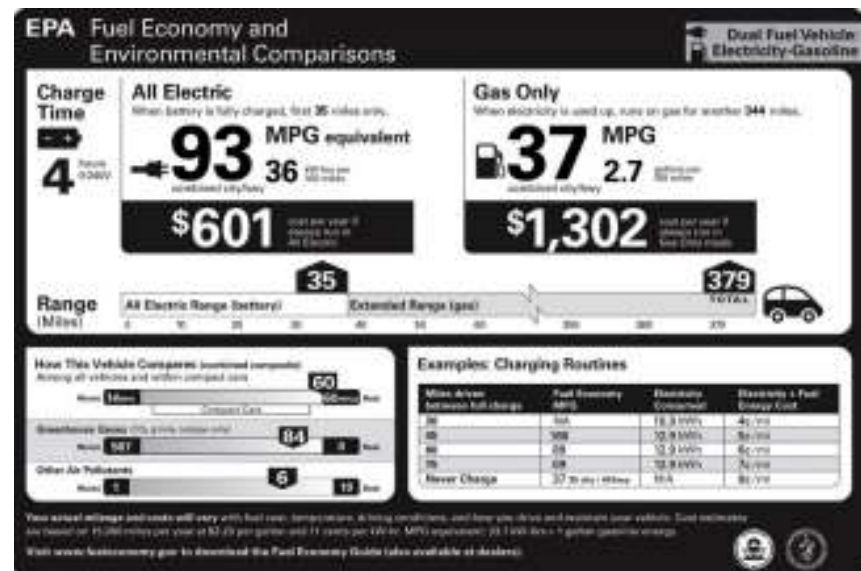
Example - RCRA Settlement with Total Petroleum (Puerto Rico)

- Fully automated release detection monitoring at 125 facilities
- Transmit monitoring data to central location



Designing Effective Regulations and Permits

1. Applicability and simplicity
2. Structural: compliance easier than noncompliance
3. Self-monitoring and third-party monitoring
4. E-Reporting and transparency
5. Market forces and incentives



Principle I - Enable everyone to easily identify who is regulated and the applicable requirements

- A. Focus regulatory requirements on fewer, better defined “upstream” sources” (supply chain)
- B. Consider: would simple rules with high compliance deliver more benefits than complicated rules with lower compliance?
- C. Use clear and objective regulatory requirements

Keep it simple.

- Simple rules with higher compliance could yield more actual benefits than complex rules with low compliance
- Simplified permits can capture requirements in one place
 - helpful for smaller sources
 - make it accessible to someone without an engineering degree

Principle 2 - Structure regulations to make compliance easier than noncompliance

- A. Build in physical structures and product designs to make noncompliance difficult
- B. Use immediate feedback technology
- C. Build in self-implementing regulatory consequences to deficiencies and noncompliance

Automatic Feedback Systems

- Software combined with hardware can:
 - Stop or modify operations
 - Send immediate alerts via email, text message, sound, or flashing lights
- Can be combined with disclosure to leverage public accountability



pH meters are like teenagers

Principle 3

Require regulated entities and/or 3rd parties to assess compliance and take steps to prevent noncompliance

Principle 3: The 5Ws of Compliance Monitoring

- **Who**
 - Source performs (self or hires consultant)
 - Independent third party
- **What**
 - Qualitative requirements (e.g., best management practices)
 - Quantitative (e.g., 30 parts per million)
- **When** (frequency)
 - Continuous
 - Periodic
 - Only upon occurrence of trigger event
- **Where**
 - Overall facility
 - Specific emission/discharge source at facility
 - Fence line of facility (e.g., air monitoring)
 - Outside facility (e.g., downstream from discharge pipe)
- **Why**
 - Compliance driver: establishes minimum requirements for facility to focus on compliance

Third Party Program Effectiveness: Best Practices

Design makes a difference

- Independence
- Objectivity
- Government oversight
- Transparency

Certifiers more lenient if they have other business relationships with the firm

Principle 4 - Leverage accountability and transparency:

- A. Electronic reporting to the government with smart tools to guide regulated entity.
- B. Public accountability via websites, mailings, signage, social media.
- *Important compliance driver even if government rarely looks at individual reports.*

Principle 5 - Leverage benefits, market forces, and other incentives that promote compliance

- A. Empower the local community
- B. Show investors and consumers when products and services are compliance
- C. Harness market forces (e.g., emission reduction credits)
- D. Provide and highlight benefits to regulated entities (e.g., energy efficiency)

Working Together

- What are you doing already related to Next Gen that other states, local and EPA could learn from?
 - EPA will share good examples
 - Have created water compendium, would like to do same for air
- Collaborate with EPA on Next Gen tools and approaches:
 - Demonstration or pilots
 - Perhaps larger evaluation project.

What states are doing now

- A few examples:
 - Texas: public reporting of excess emissions reports
 - Washington: app with information about current burn bans
 - SCAMD: daily electronic reporting for NO_x and SO_x
- Let us know: how are you already using these concepts?

Permit pilots

- Use pilots to gain experience, replicate
- Exploratory effort
- Wastewater: Piloting 5 EPA-issued permits for POTWs
 - Electronic reporting, public transparency
- Air: Team led by Region V scouting for opportunities
- Looking for permitting authorities who want to test Next Gen tools

Joint effort on advanced monitoring

- EPA-State team under E-Enterprise Leadership Council
- Getting on top of challenges presented by rapid technological change:
 - Do rules, permits need updating?
 - Verifying reliability of new technology
 - Responding to increased use by citizens
 - Managing, analyzing vast quantities of data

Questions

- How many already have experience with, or have considered, using these kinds of strategies?
- Where do you see opportunities?
- What hurdles may exist?
- How best to collaborate?

For More Information

- www2.epa.gov/compliance/next-generation-compliance
- *Next Generation Compliance* - Article by Assistant Administrator Cynthia A. Giles from The Environmental Forum
- Next Generation Compliance: Strategic Plan 2014 – 2017
- CONTACT: Hindin.david@epa.gov or Wyeth.George@epa.gov

- <http://www2.epa.gov/compliance/next-generation-compliance-memorandum-next-gen-civil-enforcement-settlements>

NPDES Compendium – examples

- Alabama e-reporting system for NPDES
- New York: sewage overflows reported to public within four hours; will be fed to state's emergency alert app
- Washington: “Eyes Over Puget Sound” combines network of monitors with flyover data, satellite imaging