



FY 2012 President's Budget Request for the Office of Research and Development

Presentation to the Science Advisory Board

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March 3, 2011



Overview

- EPA Strategic Goals
- ORD Research Accomplishments
- Integrated ORD Budget Structure
- FY 2012 President's Budget for ORD
- Conclusions



"Science must once again be the determining factor in EPA decision making. When we make a decision that will affect the health and welfare of a community, we must have an unwavering commitment to the very best scientific analysis."

EPA Administrator Lisa Jackson

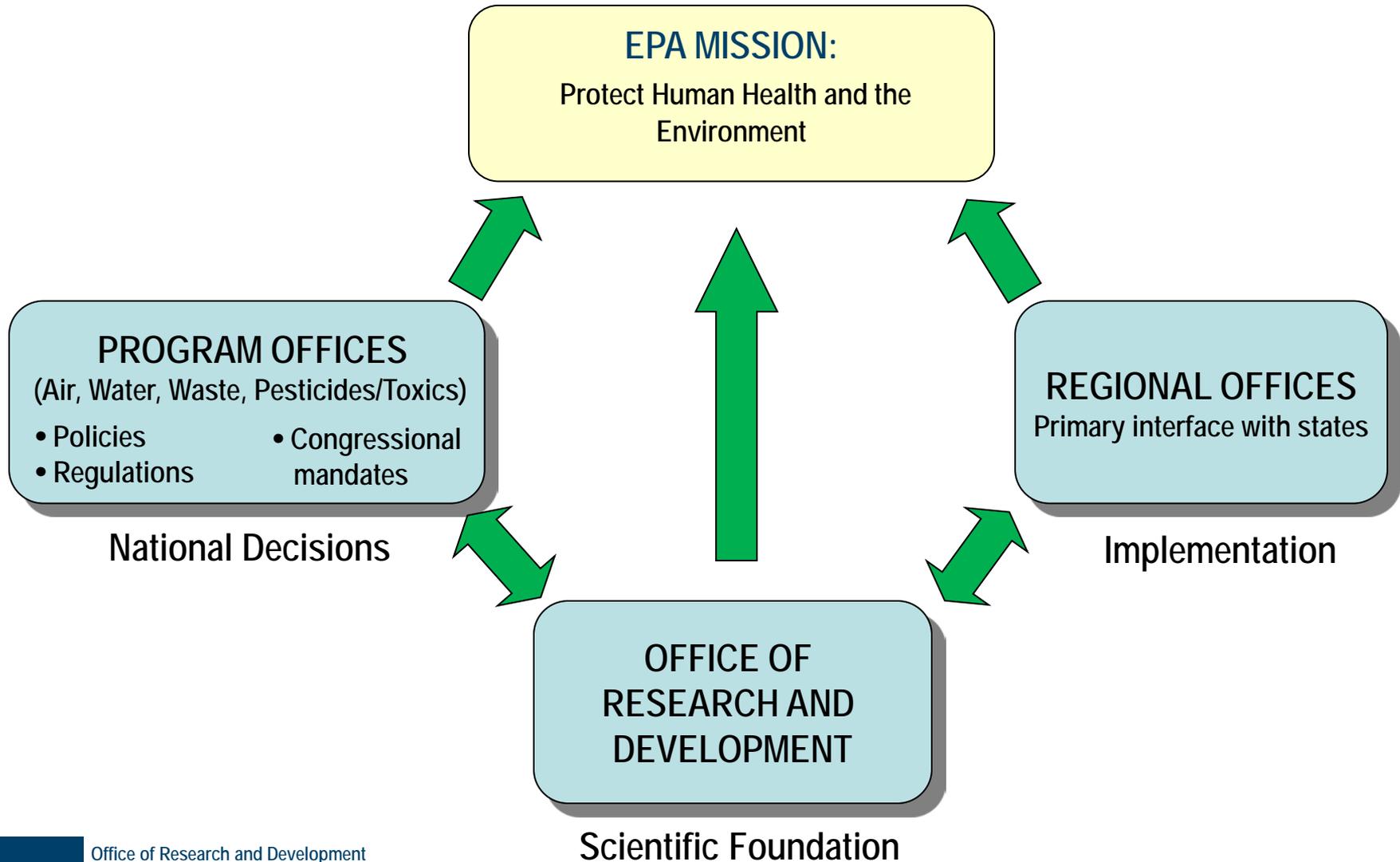
March 11, 2009

EPA Strategic Plan 2011-2015

EPA's Strategic Goals

- Taking Action on Climate Change and Improving Air Quality
- Protecting America's Waters
- Cleaning Up Communities and Advancing Sustainable Development
- Ensuring the Safety of Chemicals and Preventing Pollution
- Enforcing Environmental Laws

ORD's Role in Achieving Strategic Goals



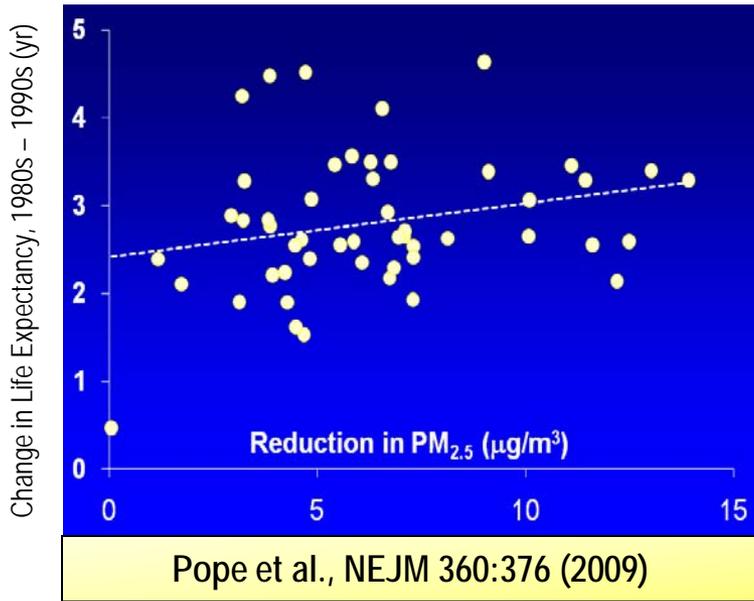
ORD at a Glance

- 1924 full time equivalents*
- \$584 million budget*
 - \$72.1 million extramural research grant program (STAR)*
 - \$14 million STAR fellowship program*
- 13 lab or research facilities across the U.S.
- Credible, relevant and timely research results and technical support that inform EPA policy decisions

*FY 2012 President's Budget Level



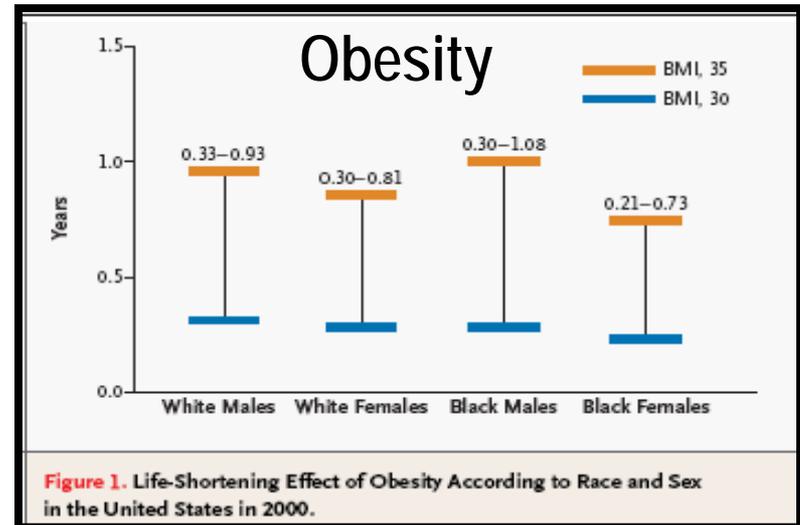
Breathe Cleaner, Live Longer



PM_{2.5} reduction between 1980 & 2000 has led to increased life-expectancy in the U.S.

**A gain of
+0.61 yr/10 µg/m³**

The effects of PM_{2.5} on life expectancy are equivalent to those from obesity.

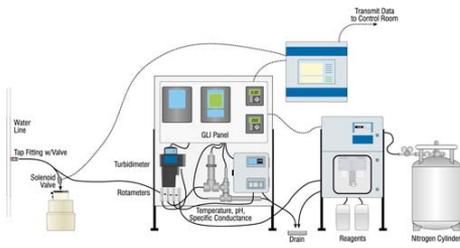


Olshansky et al., NEJM 352:11 (2005)

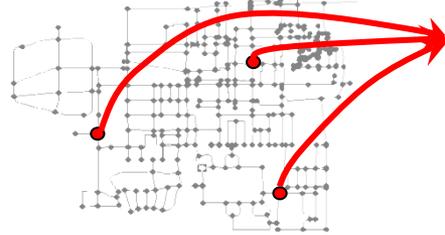
Ensuring Security of Water Supplies

CANARY water contamination detection tool observes water quality data in real time and alerts to possible contamination events.

- Integral component of OW's contamination warning system
- In use by several large water utilities
- Winner of the 2010 R&D Award



Sensor Station



Distribution Network



CANARY Analysis

Consequence Management Plan

**CANARY
ALERT!**

Finding Solutions for the Chesapeake Bay

- Recent ORD study evaluated use of green and gray infrastructure in the Chesapeake Bay watershed, and found that an optimal 2:1 mix of infrastructure will:
 - Provide a least-cost solution to meet nutrient and sediment reduction targets.
 - Achieve benefits for greenhouse gas mitigation, floodwater storage, and recreational use.
- EPA partners plan to use this model to explore options for water quality trading and other policy options.



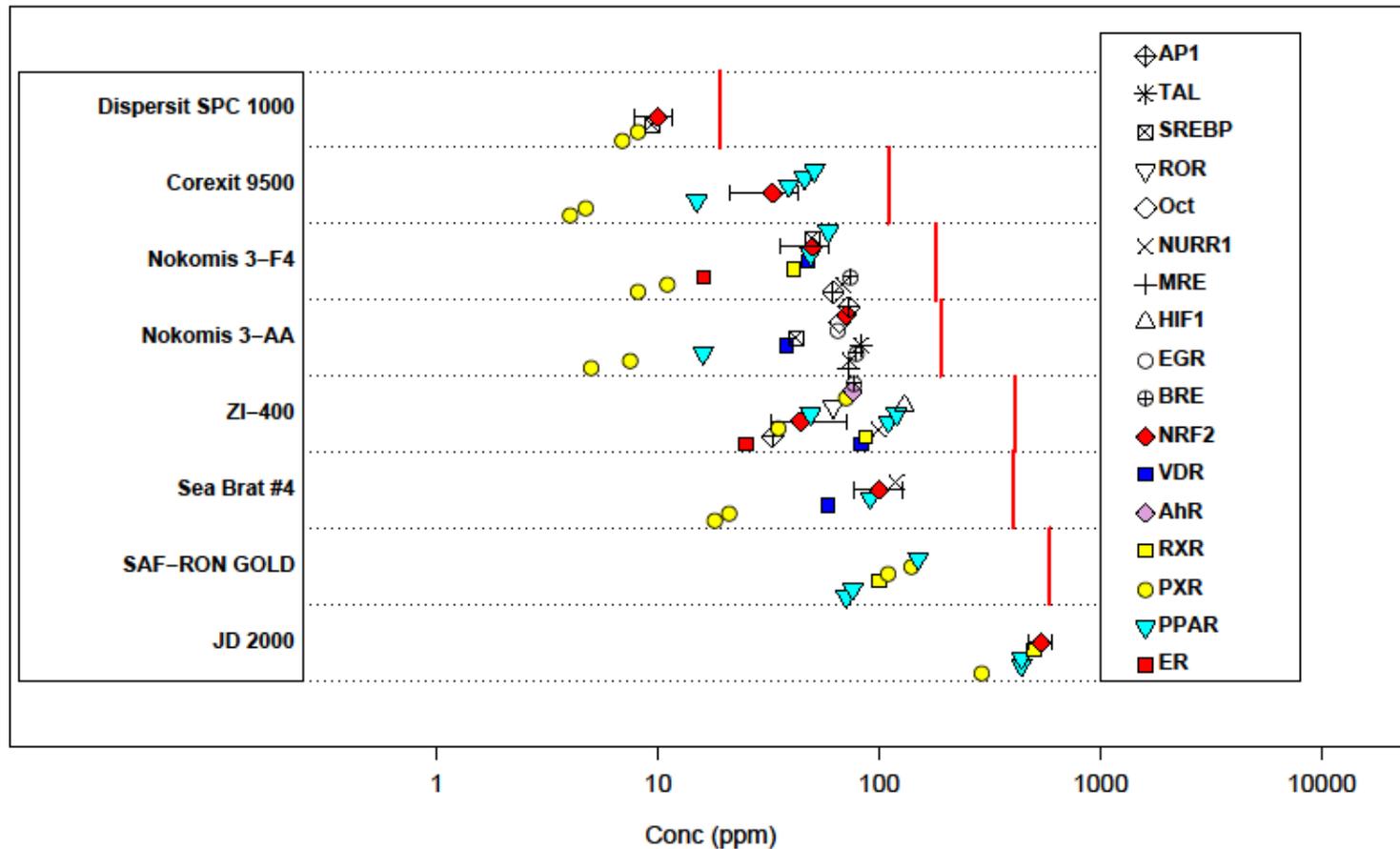
Ecosystem Service Co-benefits

Testing the Toxicity of Dispersants from the BP Oil Spill

EPA conducted tests of 8 chemical dispersants alone and mixed with oil, and found that:

- All 8 dispersants had roughly the same toxicity.
- No dispersant displayed endocrine-disrupting activity of biological significance.
- The 8 dispersants mixed with oil had similar toxicities to each other.
- The mixtures of dispersants used in the Gulf were no more toxic to aquatic test species than oil alone.
- EPA research continues to play an active role in supporting the BP oil spill clean-up and restoration.

ToxCast Bioactivity Profiling of 8 Oil Spill Dispersants



Little specific activity seen except for PXR/ PPAR xenosensors

Rising to the Challenges of Today

“As we celebrate 40 years of incredible accomplishments, we find ourselves at a critical juncture. We have a new awareness of environmental complexity and, at the same time, we have new tools, insights, and experiences to guide our mission. It is time to rise to the challenges of today, using the best of what we have, to meet the needs of the current generation while preserving the ability of future generations to meet theirs as well.”

EPA Administrator Lisa Jackson
November 30, 2010 speech to the
National Academy of Sciences

21st Century Environmental Challenges

Today's issues are broad in scope, deep in complexity and widespread in their impacts.

- Climate change
- Changing energy landscape
- Multi-pollutant exposure
- Increasing nitrogen and phosphorous impair water quality
- Environmental justice
- Thousands of new industrial chemicals and pesticides each year
- Chemical, biological, radiological-based terrorism

“Problems cannot be solved at the same level of awareness that created them.”

-Albert Einstein

Why restructure ORD research programs?

- Re-orient our research to sustainability: healthy environments v. acceptable risk
- Move away from stove-pipes
- Promote systems thinking and innovation
- Couple excellence in problem assessment with excellence in solving problems
- Encourage integrated, transdisciplinary research
 - Across ORD labs
 - Engage EPA partners and outside stakeholders
- Align with EPA strategic goals

Integrated Transdisciplinary Research

“It will be essential for EPA as a whole, and not just ORD alone, to adopt a systems approach to research planning. It will also be essential to plan and conduct research in new, integrated and cross-disciplinary ways to support this systems approach.”

EPA Science Advisory Board
July 8, 2010

Realigning our Research

We re-structured 12 of our research programs into 4 programs aligned with the EPA Strategic Goals:

Strategic Goals 2011-2015

Taking Action on Climate Change and Improving Air Quality

Protecting America's Waters

Cleaning Up Communities and Advancing Sustainable Development

Ensuring the Safety of Chemicals and Preventing Pollution

Integrated Research Structure

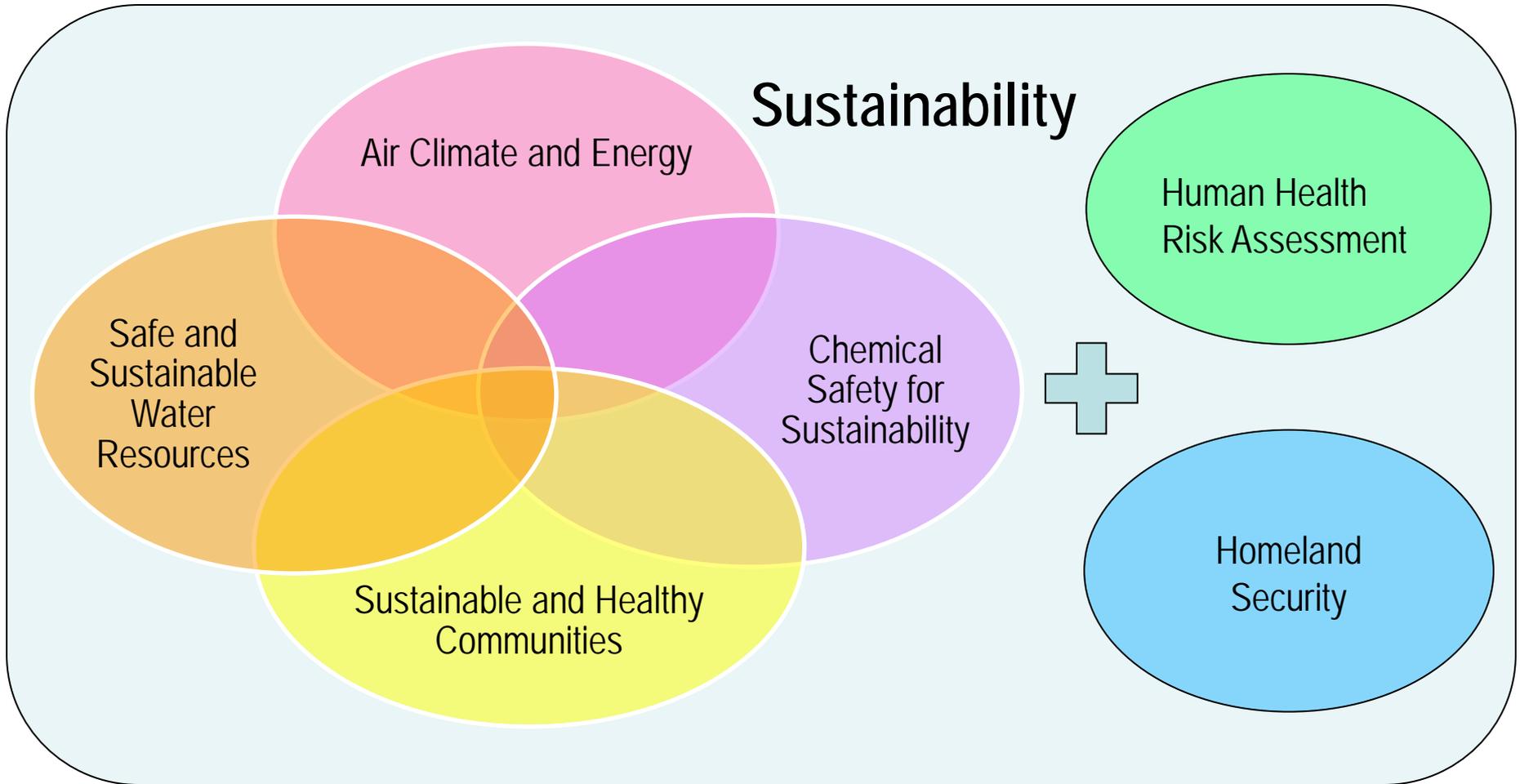
Air, Climate & Energy

Safe and Sustainable Water Resources

Sustainable and Healthy Communities

Chemical Safety for Sustainability

Integrated ORD Research Programs



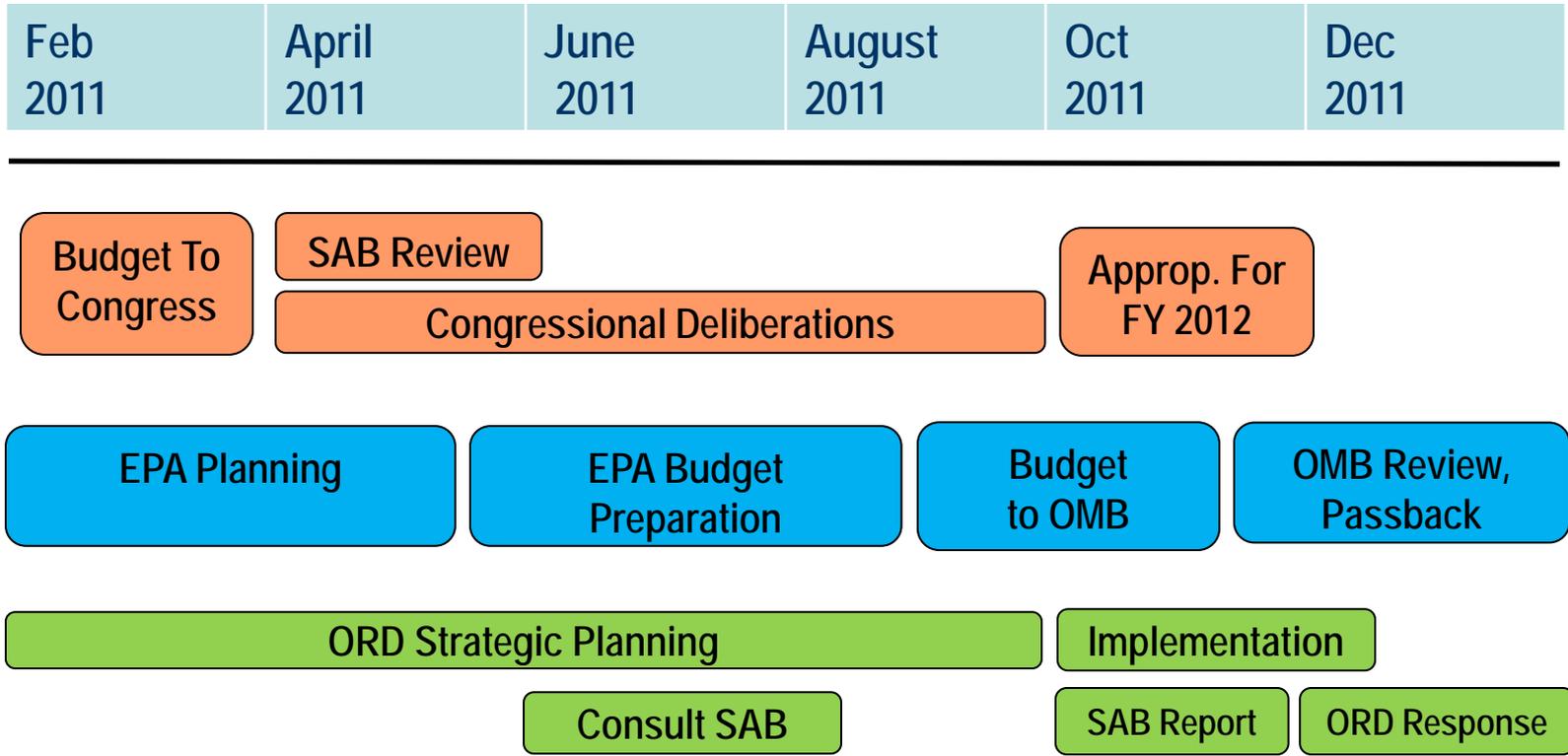
Former ORD Research Structure	Integrated ORD Research Structure
Global Change Research	Air, Climate & Energy
Sustainability Research	
Clean Air Research	
Human Health and Ecosystems Research	
Drinking Water Research	Safe and Sustainable Water Resources
Water Quality Research	
Human Health and Ecosystems Research	Sustainable and Healthy Communities
Pesticides & Toxics Research	
Sustainability Research	
Fellowships	
Land Research(Excluding Nanotechnology)	
EDCs Research	Chemical Safety for Sustainability
Computational Toxicology Research	
Human Health & Ecosystems Research	
Human Health Risk Assessment (NexGen)	
Pesticides & Toxics Research	
Land Research (Nanotechnology)	
Clean Air Research (Nanotechnology)	
Sustainability Research	
Human Health Risk Assessment	Human Health Risk Assessment
Homeland Security	Homeland Security



FY 2012 President's Budget for ORD

Planning and Budgeting Activities

February 2011-December 2011



Maintaining a Strong Science Foundation

“As millions of families are cutting back and spending less, they expect the same good fiscal sense out of their government. That is why this budget reflects the tough choices needed for our nation’s short- and long-term fiscal health – and allows EPA to maintain its fundamental mission of protecting human health and the environment.”

EPA Administrator Lisa Jackson
FY 2012 President’s Budget Press
Conference
Feb 14, 2011

FY 2012 President's Budget for ORD

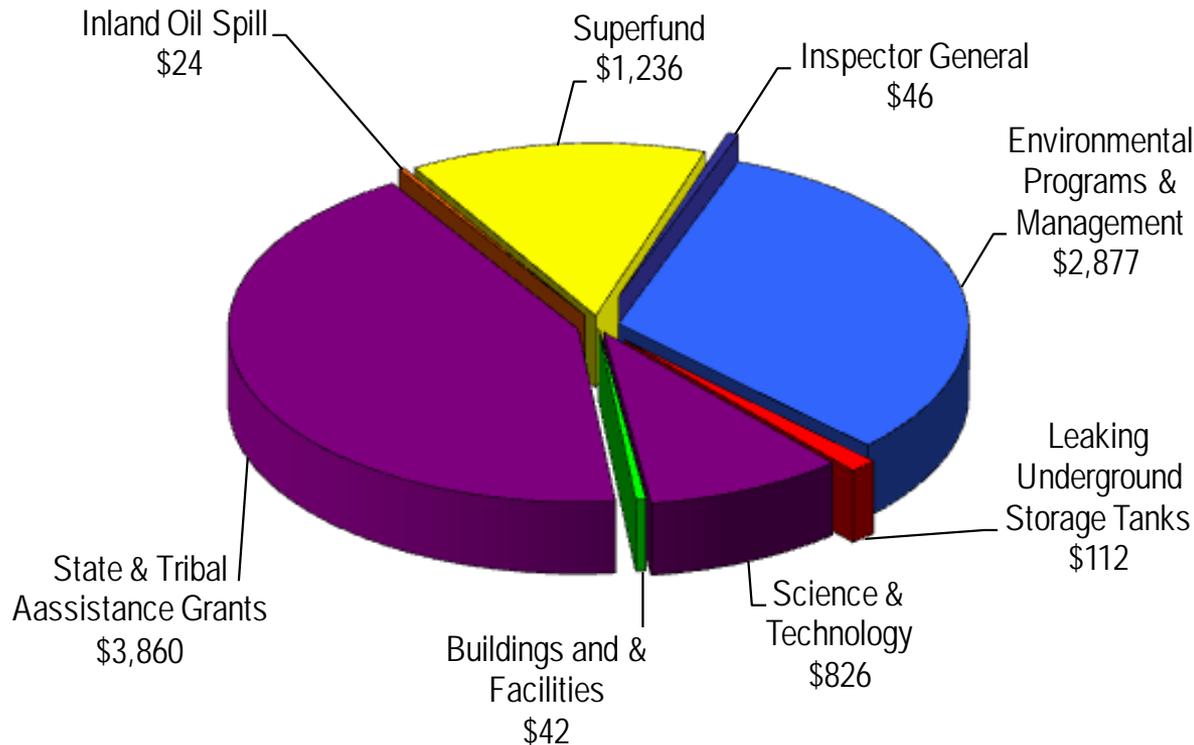
- The 2012 President's Budget requests \$584.1 million for ORD, a decrease of \$12.6 million from the 2010 Enacted budget.
- The decrease in 2012 represents both efficiencies and difficult choices made to ensure support for highest priority research.
- Our budget redirects funds to develop innovative solutions in priority areas including endocrine disrupting chemicals, green chemistry, green infrastructure, computational toxicology, air monitoring, drinking water, and STEM fellowships.
 - A significant portion of these resources will be competed through our STAR grants and fellowship program.

FY 2012 Appropriation Totals

(Dollars in Millions)

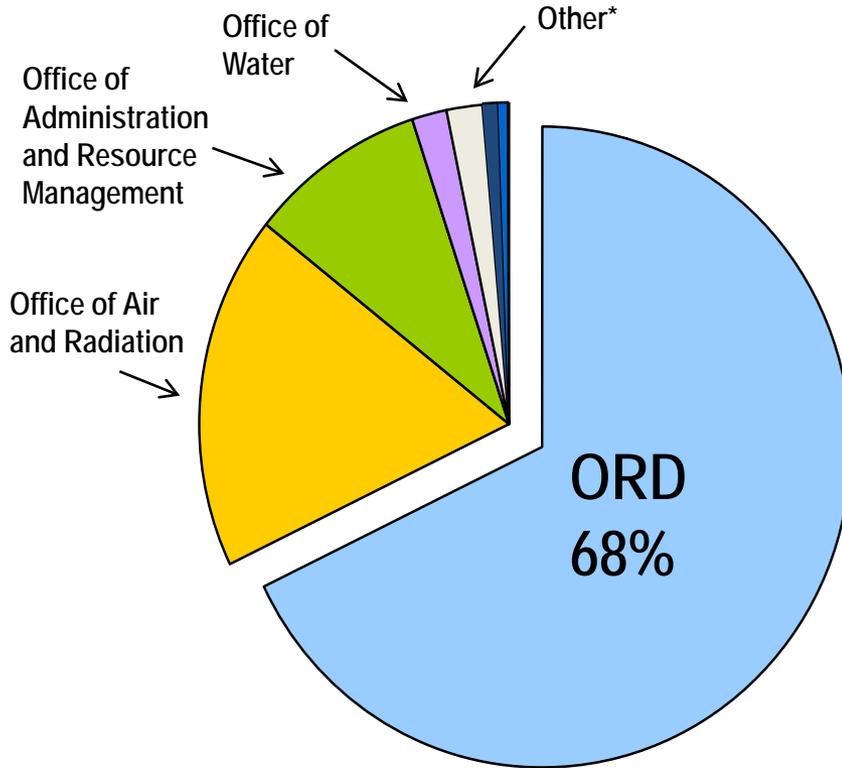
FY 2012 President's Budget for
EPA: \$8.97 Billion

FY 2012 President's Budget
for ORD: \$584.1 Million



Appropriation Accounts, FY 2012 President's Budget

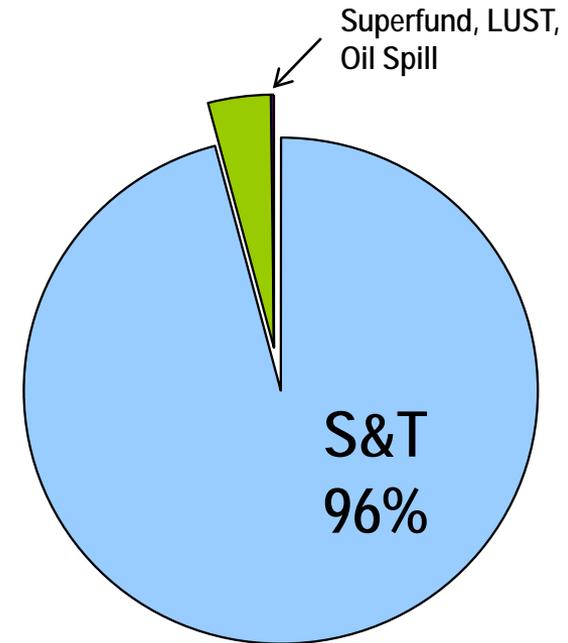
\$826 million



Agency S&T Accounts

*Includes OECA (\$16M), OCSPP (\$7M), OEI (\$4M), and OCFO (\$1M)

\$584 million

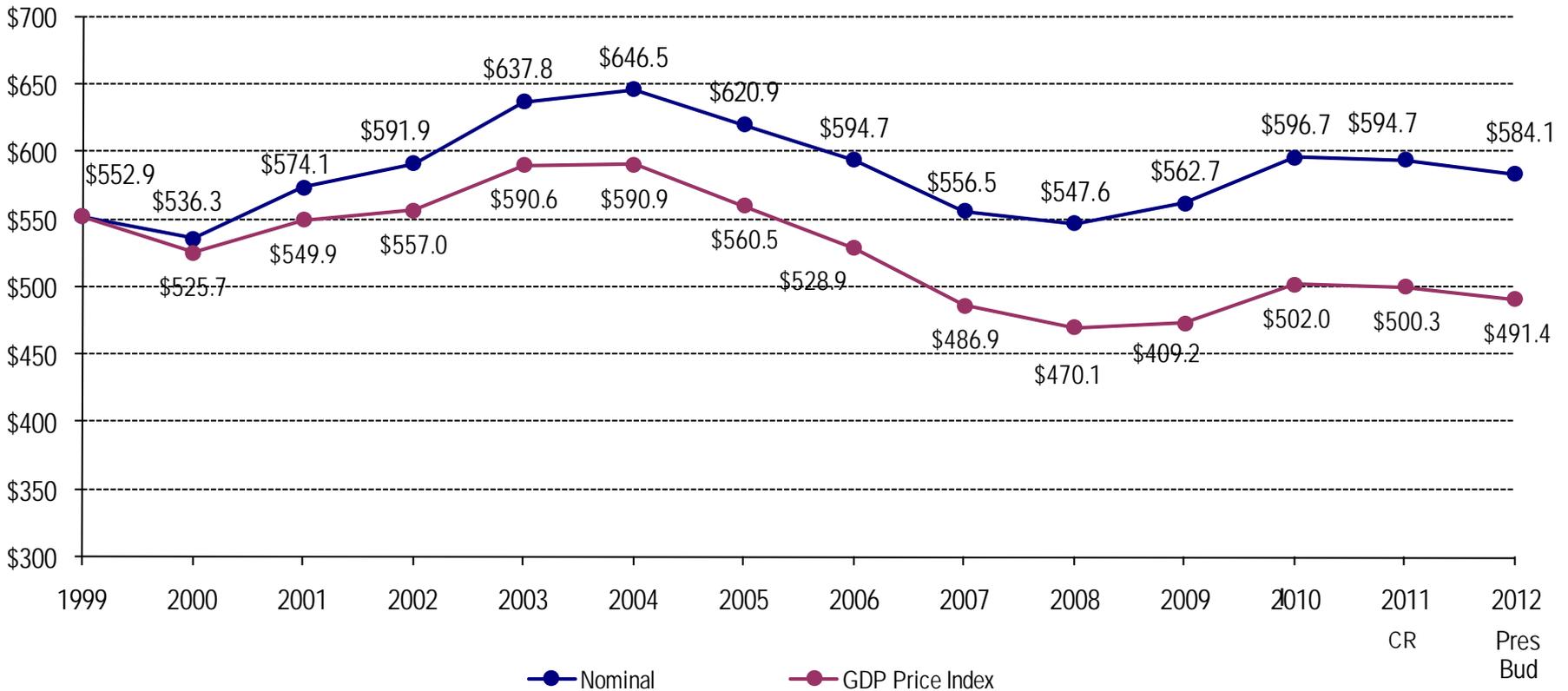


ORD Budget

Resource Trends

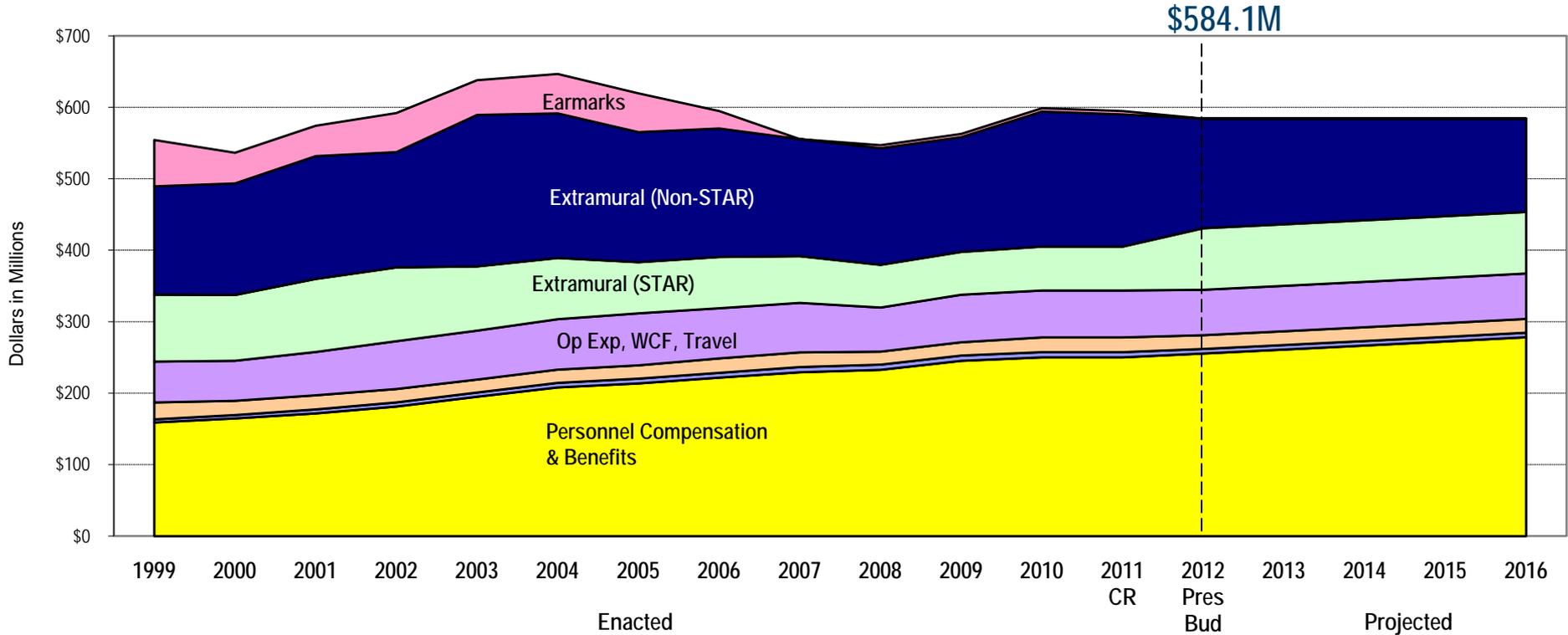
ORD Total Budget with Inflation Indices

(enacted budget, includes earmarks, dollars in millions)

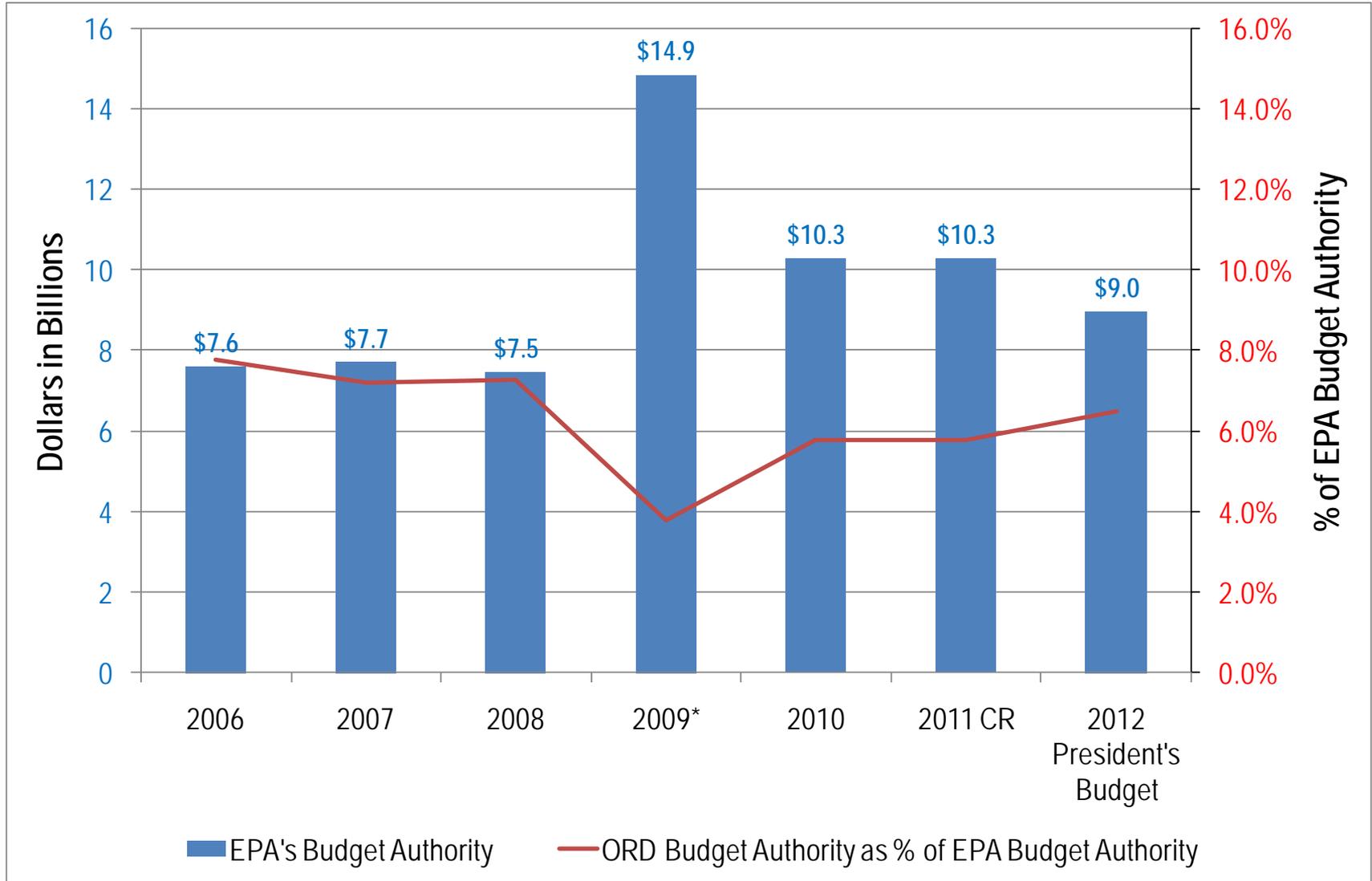


Resource Trends

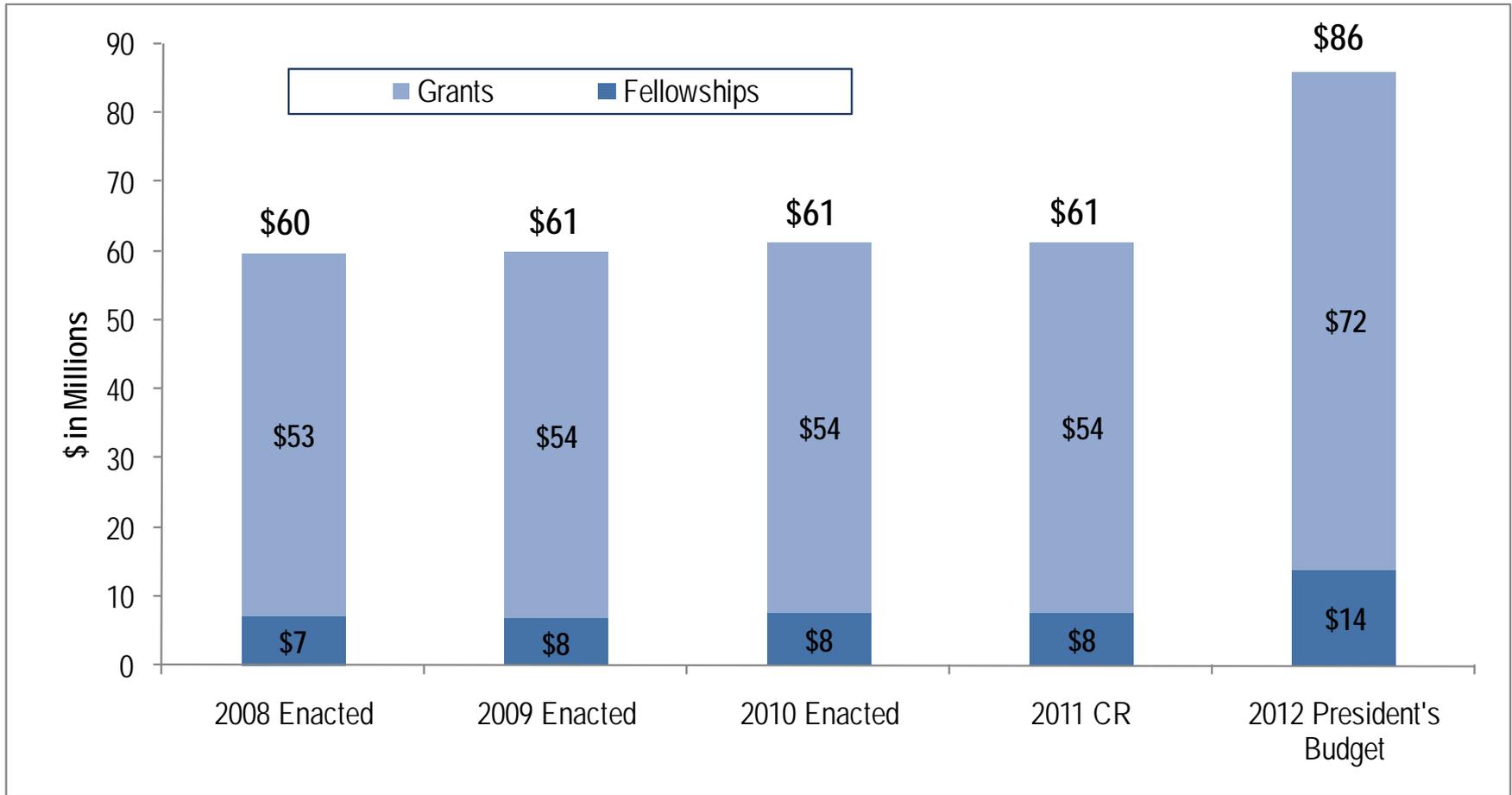
ORD Budget by Type of Spending



Budget Trends: EPA and ORD's Relative Position

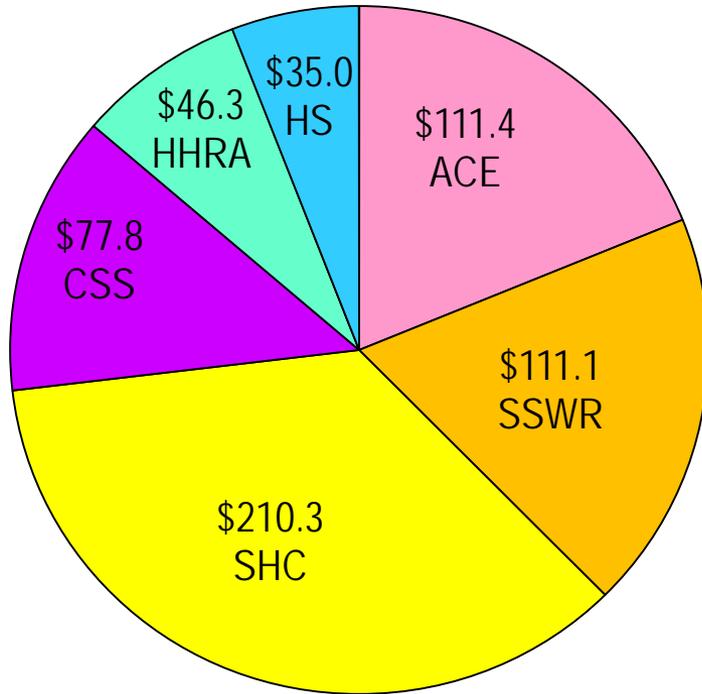


Historical Science to Achieve Results (STAR) Grants and Fellowships Funding (Dollars in Millions)



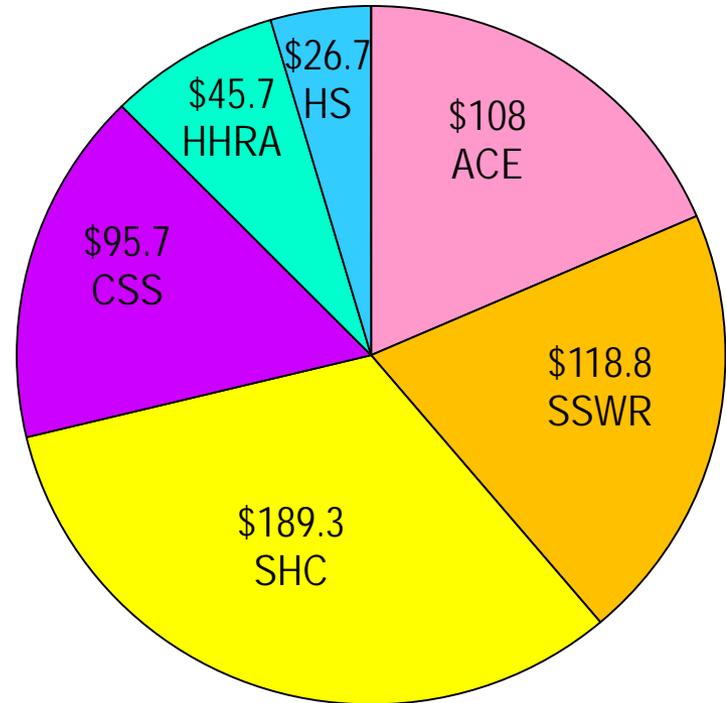
FY 2010 and 2012 Research Programs

FY 2010 Enacted



- Air, Climate and Energy
- Sustainable and Healthy Communities
- Human Health Risk Assessment

FY 2012 Pres. Budget



- Safe and Sustainable Water Resources
- Chemical Safety for Sustainability
- Homeland Security

EPA's FY 2012 Pres Bud Request for Research

Extramural, Intramural, and Administrative Resources

Program/Project	Extramural Research Program (STAR)		Intramural Research Program		Administrative FTE & Travel		ORD Total	
	\$000	FTE	\$000	FTE	\$000	FTE	\$000	FTE
Air, Climate & Energy	\$26,751	6.9	\$72,409	237.2	\$8,839	65.5	\$108,000	309.6
Safe & Sustainable Water Resources	\$11,870	2.2	\$94,355	344.4	\$12,551	93.0	\$118,776	439.6
Sustainable & Healthy Communities	\$33,743	18.4	\$137,809	471.8	\$17,750	131.5	\$189,302	621.7
Chemical Safety for Sustainability	\$18,080	5.0	\$69,220	225.8	\$8,357	61.9	\$95,657	292.7
Human Health Risk Assessment	\$0	0.0	\$40,152	154.4	\$5,590	41.4	\$45,742	195.8
Homeland Security	\$0	0.0	\$24,805	51.0	\$1,847	13.7	\$26,652	64.7
Total	\$90,444	32.5	\$438,750	1484.6	\$54,935	407.0	\$584,129	1924.1

FY 2012 EPA Research Budget Request Highlights

Air, Climate and Energy (ACE)

- Redirections to: Air Monitoring
- Disinvestments: Mercury, Biofuels

Safe and Sustainable Water Resources (SSWR)

- Redirections to: Hydraulic Fracturing, Green Infrastructure
- Disinvestments: Beaches (Water Quality)

Sustainable and Healthy Communities (SHC)

- Redirections to: STAR Fellowships
- Disinvestments: Oil spills, Mapping/modeling (Ecosystems),
Superfund, Children's Health, AMI/GEOSS

FY 2012 EPA Research Budget Request Highlights

Chemical Safety and Sustainability (CSS)

- Redirections to: Endocrine Disrupting Chemicals STAR Grants, Toxicology Tools for EDSP, Green Chemistry/E-waste
- Disinvestments: Biotechnology, Screening Assays/Approaches (Human Health)

Human Health Risk Assessment

- No major changes

Homeland Security

- Disinvestments: Decontamination and Methods Development

Cross-program

- Redirections to: Long Term Lab Study
- Disinvestments: Administrative and Programmatic Efficiency Savings

ORD Innovation

What we are working towards. . .

- Pathfinder Innovation Projects: supporting the inherent talents of ORD scientists and engineers to be innovative
- External challenges: harnessing external ingenuity to help solve problems
- Collaborative platforms for both internal and external participants

SAB Comments Submitted on 2011 President's Budget

- Modest increase for the clean air and global change research programs not sufficient
- Requested budget for ecosystem services shows significant reduction
- Although environmental justice is identified as a priority, requested budget does not reflect importance
- Investment in social, behavioral, and decision sciences across ORD research portfolio is critically needed

Timely, Relevant, and Responsive Research

- “All NAAQS all the time”
- Cook Stoves
- Hydraulic Fracturing
- Water Technology Cluster
- Libby, MT Asbestos
- PCBs in Schools
- IRIS Assessments

Conclusion

- EPA research is addressing the nation's most critical science and technology priorities to assure that policy and regulatory actions needed to protect public health and our natural environment are based on strong science.
- EPA research must evolve to effectively solve 21st century environmental challenges.
- EPA research has shifted towards an integrated, systems approach to develop innovative, sustainable solutions to these challenges.
- We look forward to continued collaboration with the SAB as we position our research program to anticipate and respond to increasingly complex environmental challenges.

APPENDIX

ORD FY 2010 to FY 2012 in INTEGRATED Program/Project Structure

Program/Project	FY 2010 Enacted ¹		FY 2011 CR		FY 2012 Pres Bud		Change from 2010 to 2012	
	\$M	FTE	\$M	FTE	\$M	FTE	\$M	FTE
Homeland Security Research	\$35.0	58	\$35.0	58	\$26.7	65	(\$8.4)	7
Human Health Risk Assessment	\$46.3	183	\$46.3	183	\$45.7	196	(\$0.6)	13
Air, Climate & Energy Research	\$111.4	314	\$111.4	314	\$108.0	310	(\$3.4)	(4)
Safe & Sustainable Water Resources Research	\$111.1	427	\$111.1	427	\$118.8	440	\$7.7	13
Sustainable & Healthy Communities Research ¹	\$210.3	647	\$208.3	647	\$189.3	622	(\$21.0)	(25)
Chemical Safety for Sustainability Research	\$77.8	284	\$77.8	284	\$95.7	293	\$17.8	9
Earmarks	\$4.7	0	\$4.7	0	\$0.0	0	(\$4.7)	0
Total²	\$596.7	1911	\$594.7	1911	\$584.1	1924	(\$12.6)	13

1. Includes the 2010 \$2M supplemental appropriation for research on the effects of oil spills and dispersants on human health and ecosystems.
2. Totals may not add due to rounding

ORD FY 2010 to FY 2012 in FORMER Program/Project Structure

Program/Project	FY 2010 Enacted ¹		FY 2011 CR		FY 2012 Pres Bud		Change from 2010 to 2012	
	\$M	FTE	\$M	FTE	\$M	FTE	\$M	FTE
Clean Air Research	\$81.9	270	\$81.9	270	\$83.3	263	\$1.4	(7)
Global Change Research	\$20.8	36	\$20.8	36	\$20.8	41	\$0.0	6
Drinking Water Research	\$49.2	190	\$49.2	190	\$52.5	196	\$3.3	6
Water Quality	\$61.9	237	\$61.9	237	\$66.2	243	\$4.3	7
Land Protection Research	\$36.3	155	\$36.3	155	\$32.4	149	(\$3.9)	(5)
Fellowships	\$11.1	3	\$11.1	3	\$17.3	6	\$6.2	4
Human Health & Ecosystems Research ¹	\$161.5	485	\$159.5	485	\$145.4	475	(\$16.1)	(10)
Sustainability Research	\$27.4	71	\$27.4	71	\$26.8	67	(\$0.6)	(4)
Pesticides & Toxics Research	\$27.3	137	\$27.3	137	\$27.2	135	(\$0.2)	(2)
Computational Toxicology Research	\$20.0	33	\$20.0	33	\$21.2	34	\$1.2	2
Endocrine Disrupting Chemicals Research	\$11.4	50	\$11.4	50	\$16.9	46	\$5.5	(4)
Homeland Security Research	\$35.0	58	\$35.0	58	\$26.7	65	(\$8.4)	7
Human Health Risk Assessment	\$48.2	189	\$48.2	189	\$47.5	202	(\$0.7)	14
Earmarks	\$4.7	0	\$4.7	0	\$0.0	0	(\$4.7)	0
Total²	\$596.7	1911	\$594.7	1911	\$584.1	1924	(\$12.6)	13

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