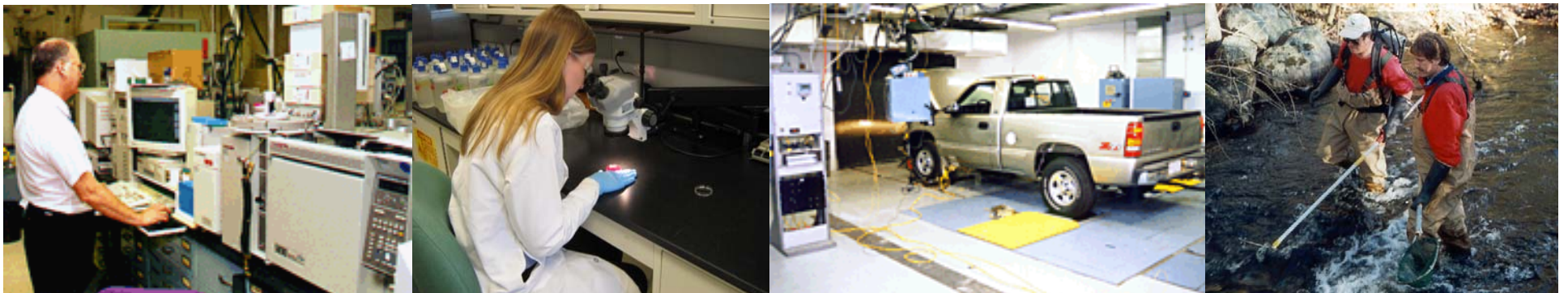


EPA's Laboratory Infrastructure Review

December 5, 2007



Acknowledgement

The following individuals contributed time, ideas, information, and expertise to develop the report on the near-term EPA laboratory study:

Lara Autry (ORD), Dale Bates (Region 7), Sam Becker (Region 6), Amy Caldwell (OAR), Andrea Cherepy (OAR), Steve Dorer (OAR/OTAQ), Bucky Green (OARM), Tonya Hudson (OAR/ORIA), Rick Keigwin (OPPTS/OPP), Mike Kenyon (Region 1), Jim Kitchens (ORD), Bill Lovely (Region 1), Lyndia McQueen (OAR/OTAQ), Susan Mizinski (OAR/OTAQ), David Neleigh (Region 6), Jennifer Orme-Zavaleta (ORD), Dale Pahl (ORD), Jorge Rangel (ORD), Bill Ridge (OARM), Steve Schmelling (ORD), Joe Slayton (Region 3), Margaret Walters (OAR/ORIA), Dennis Wesolowski (Region 5), Candida West (ORD), Daniel Young (Region 6), Emma Zinsmeister (ORD)

The following individuals helped coordinate the laboratory review across EPA:

Elizabeth Cotsworth (OAR/ORIA), Beth Craig (OAR), Susan Hazen (OARM), Jim Jones (OPPTS), Lek Kadeli (ORD), Ira Leighton (Region 1), Jack Puzak (ORD), Larry Starfield (Region 6)

The following individuals helped prepare and review communication information about the the near-term laboratory study:

Melissa Anley-Mills (ORD), Robert Cassell (ORD), Nancy Grantham (Region 1), Valerie Green (OCFO), Dale Haroski (OPA), Susan Kantrowitz (OARM), John Millett (OAR), Neil Naraine (ORD), Doug Parsons (OPPTS)

EPA's Laboratory Network

- EPA's laboratory network is a vital part of the Agency's efforts to protect human health and the environment
 - Contributions by EPA's world class laboratory scientists and technicians create the scientific foundation for agency decisions & actions
- Nationwide, EPA operates >200 facilities. Among these facilities, EPA's laboratory network consists of 39 fixed structural laboratories located in 26 cities. These laboratories include
 - 21 research and development labs
 - 8 program labs
 - 10 regional labs
- Laboratories are designed to carry out a diverse set of scientific functions
 - Contribute critical scientific, research, & programmatic support that help EPA respond to environmental statutes and Presidential directives



EPA's Laboratory Network

continued from previous slide

- **Roles of EPA laboratories continue to evolve with new challenges of 21st century**
 - Congressional legislation & Presidential Directives for homeland security
 - Climate change, nanotechnology, computational toxicology
- **Future challenges also include sustainable design, energy conservation, and environmental performance**
 - For example, federal agencies are responding to energy performance goals for all facilities established by the Energy Policy Act of 2005 and Executive Order 13423
 - To meet these energy goals EPA must reduce energy consumption across its facilities by an average of 3% per year through the year 2015. This equates to a total reduction of 30% from EPA's FY 2003 baseline.



Need for Review of Laboratory Network

- Last comprehensive lab review completed in 1994
 - Research, Development, and Technical Services at EPA: A New Beginning
- FY 2008 EPA budget process identified need for a new lab review
- Laboratory review will help EPA
 - Continue to provide sound science, programmatic support, and cutting-edge research to the Agency & to the American public
 - Ensure effective & efficient laboratory expenditures
 - Respond to emerging challenges



Two-Part Laboratory Review Process

- ORD Assistant Administrator George Gray announced a two-part review process on March 15, 2007
 1. Near-Term Internal Study
 - Identifies current and planned actions to improve efficiency and effectiveness at EPA's laboratories
 - Draft report now available to be released
 2. Long-Term External Study
 - Assess & evaluate the laboratory network needs over the next 10 years
 - Determine if the existing network is able to meet these needs
 - Study expected to take about 36 months



Purpose & Scope of Near-Term Study

- Purpose is to identify opportunities to improve efficiency and effectiveness at EPA laboratories, for example:
 - Reduce energy & water use
 - Purchase supplies collectively in bulk
 - Reduce the amount of chemicals used & disposed of
 - Increase the extent to which resources are shared by multiple laboratories
- Suggestions will be used to identify high-value efficiency actions that can be implemented at other EPA laboratories
- Focused on the operation & maintenance of existing fixed structural laboratories
 - Does not attempt to identify best practices in design, construction, or decommissioning
- It is not a systematic study; it is a short-term snapshot without quantitative analysis



Findings and Recommendations

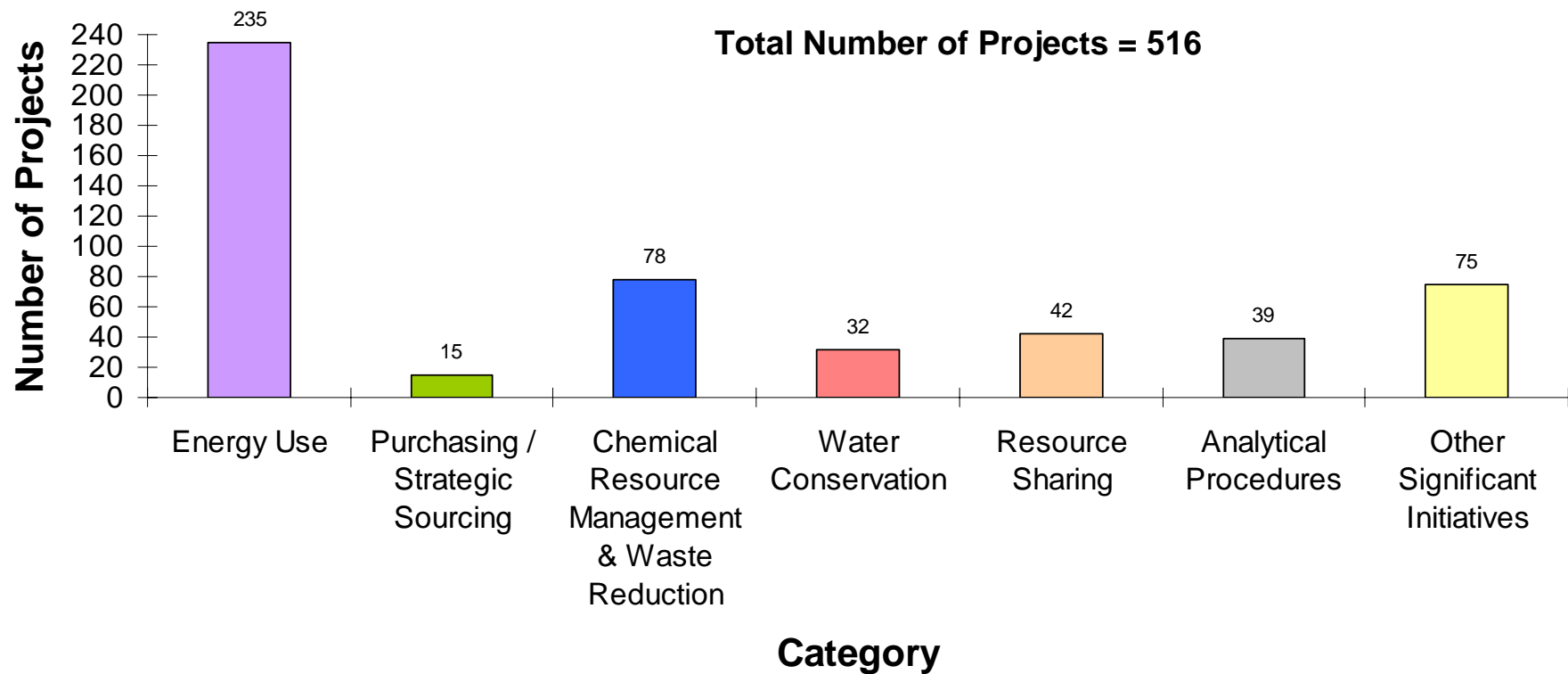
from the Executive Summary

- Objective of near-term lab study accomplished: EPA laboratory employees identify 516 opportunities to improve laboratory efficiency & effectiveness, e.g.
 - Reduce energy & water use
 - Purchase supplies collectively in bulk
 - Reduce the amount of chemicals used & disposed of
 - Increase the extent to which resources are shared by multiple laboratories

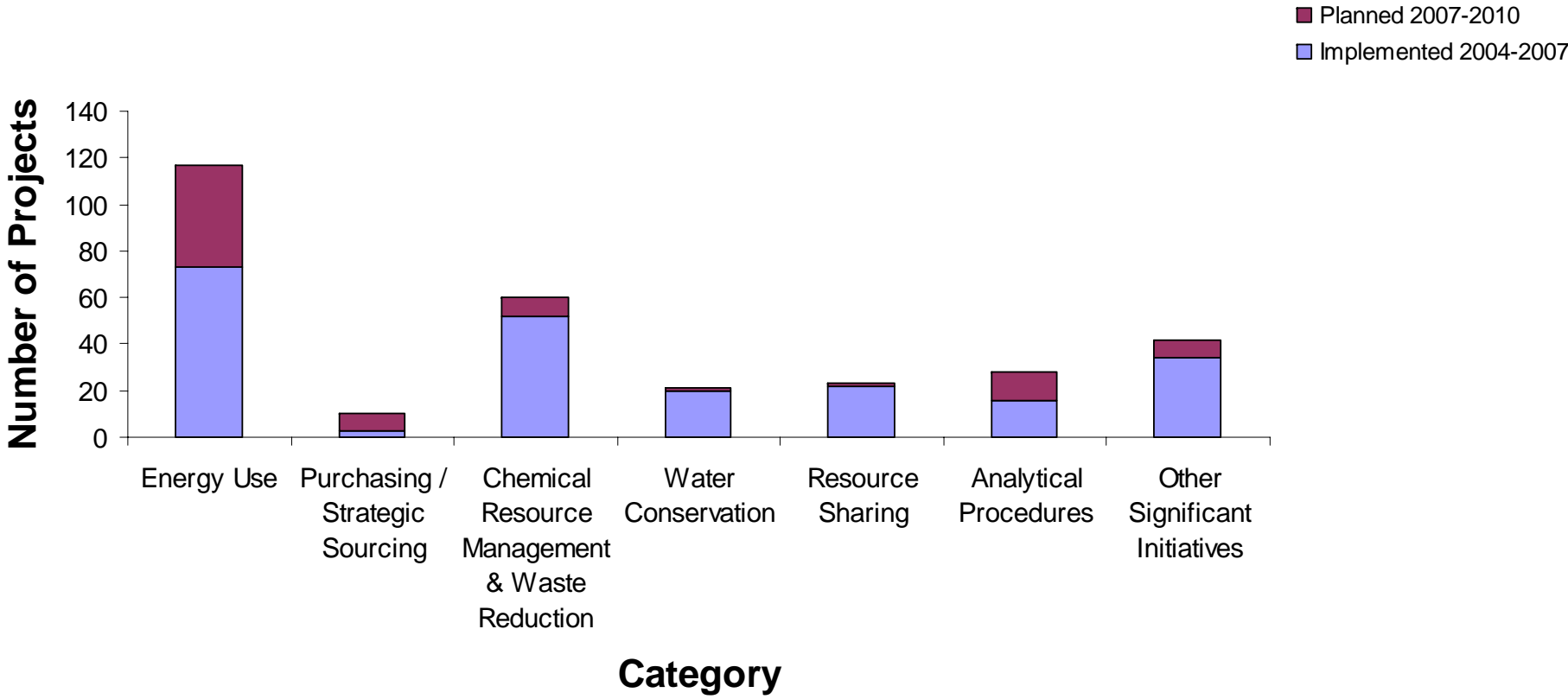
- More than half of these opportunities represent tangible results—actions implemented from 2004 through 2007

- Because of the strong interest among EPA laboratories, EPA is distributing a draft report widely across its laboratories and offices
 - The draft includes the EPA suggestions about efficiency actions taken between 2004-2007 & those planned for 2007-2010
 - In distributing the draft report now, EPA is highlighting opportunities for stewardship and encouraging its facility managers, laboratory managers, and employees to explore whether these actions and best practices can improve operating efficiency and effectiveness at their own facilities and laboratories.

Number & Distribution of Projects Identified during Near-Term Study



Distribution of Projects Across Time



Recommendations

from the 7 categories of commonsense actions and best practices

1 Energy Use

- Recommission laboratory heating, ventilation and air conditioning (HVAC) systems & convert continuous air volume (CV) systems to variable air volume (VAV) systems
- Implement operations & maintenance best practices (e.g., upgrade to T-8 lights, implement temperature setbacks, turn off lights & equipment when not in use, develop & implement employee awareness programs)
- Pursue Energy Savings Performance Contracts, when appropriate & advantageous for Agency

2 Efficient Purchasing/Strategic Sourcing of Equipment & Supplies

- Finalize strategic sourcing initiative for laboratory commodities; measure success of effort
- Explore opportunities for extending strategic sourcing to other laboratory purchase areas (e.g., gases & large equipment)

3 Chemical Resource Management & Waste Reduction

- Continue development of microanalyses coupled with green chemistry
- Share chemical stocks through consolidation of chemical inventory systems or through other improved means of cross-communications
- Continue implementation of recycling, especially as additional markets for recyclables open

4 Water Conservation

- Develop & implement water management plans at all laboratories
- Consider installation of water metering within facilities
- Assess efficiencies of major water use systems within facilities (e.g., heating, ventilation, HVAC systems, & water treatment systems)

continued on the next slide . . .

Recommendations

*from the & 7 categories of commonsense actions and best practices
continued from the previous slide*

5 Improvements in Resource Sharing

- Develop & implement purchasing efficiencies (e.g., agreements with other organizations for analytical services, use of EPA contracts expertise to ensure that equipment purchases are fully integrated, establish IAGs with other federal organizations to utilize excess space at their facilities, pursue cross-laboratory & division partnerships for capital equipment acquisitions)
- Find opportunities where laboratories can team up to accomplish work
- Implement principles of centralized & shared equipment resources across laboratories

6 Efficient Analytical Procedures

- Use automated sample preparation instrumentation that reduce time, chemicals, & waste
- Explore innovative analytical instrumentation that maximizes the number of analyses performed
- Remove regulatory &/or other barriers to use more efficient & effective methods to generate data

7 Other Significant Activities

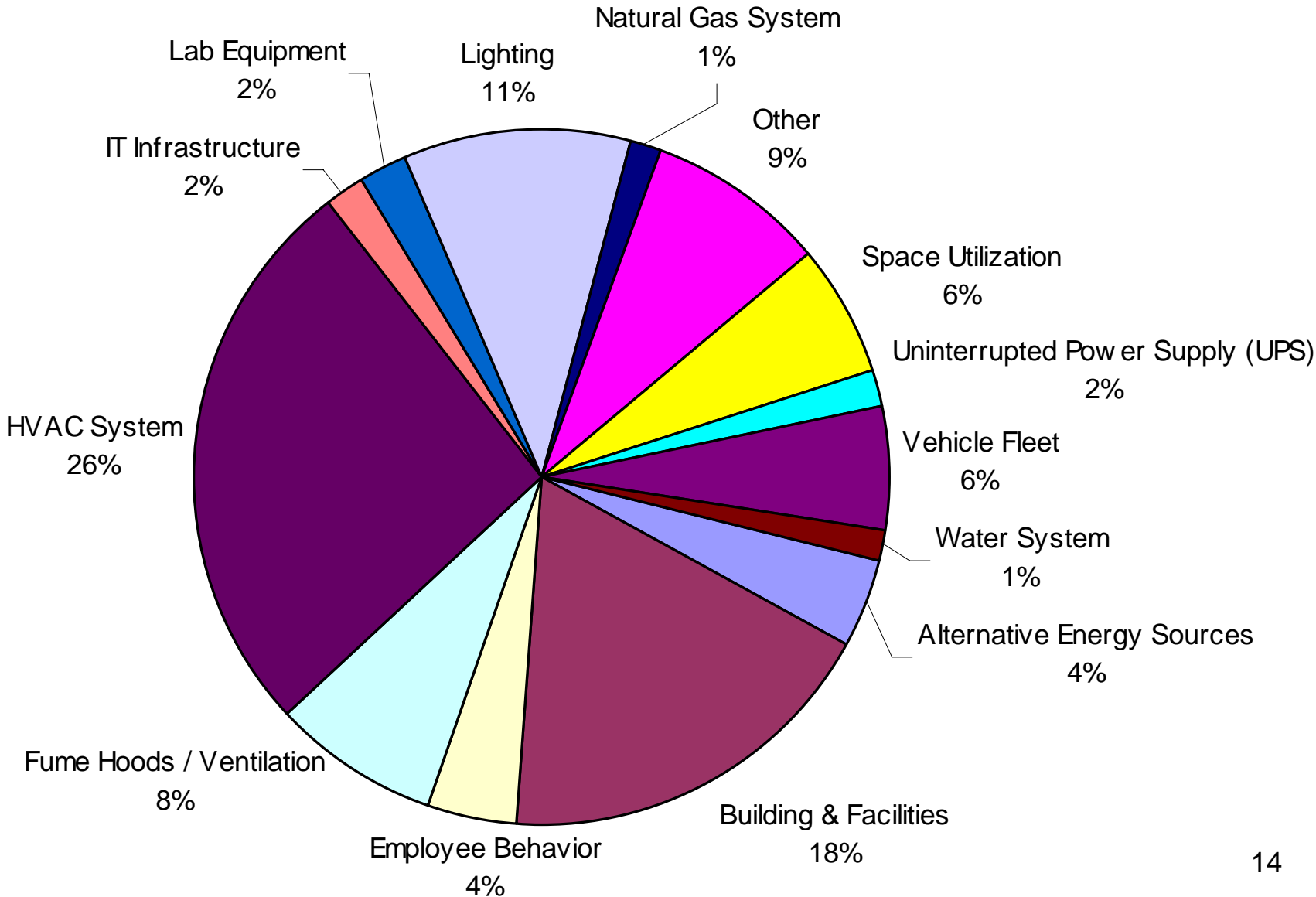
- Integrate facility- & location-based functions to improve workforce efficiency and reduce cost
- Restructure active workforce to better utilize innovative grant & contract resources
- Reduce instrument service agreements through life cycle planning & oversight of repair requirements
- Use indefinite quantity contracts (IDIQ) to provide flexibility in use of contract services

Organization of Report on Near-Term Study

Chapter	Description and Key Concepts
1.0, Executive Summary	Gives a brief overview of the crucial elements of this study: purpose and justification for the report, methodology, summary and next steps
2.0, Introduction	Introduces background concepts for this report, including EPA laboratories and the Agency's mission, and gives a more in-depth purpose and scope for the study
3.0, Laboratory Facilities, Buildings, and Infrastructure	Briefly describes fundamental attributes of the built environment that supports EPA's laboratory network; Key concepts explained in this chapter include the elements and systems integrated in a typical laboratory facility; life-cycle management of laboratory facilities; and recent legislation, executive orders, and partnerships that affect EPA laboratory facilities
4.0, Opportunities to Improve Efficiency and Effectiveness	Describes the opportunities, actions, and best practices that improve laboratory efficiency and effectiveness.; The opportunities are divided into seven sections: energy use reduction, strategic sourcing/purchasing of equipment and supplies, chemical resource management and waste reduction, water conservation, resource sharing, analytic procedures, and other significant initiatives
5.0, Summary and Next Steps	Briefly reviews the highlights from the commonsense actions and best practices and recommends "next steps" to communicate and apply information about the highest-value opportunities.
Appendix 1:	Acronyms
Appendix 2: Functions across EPA Network	Illustrates the functions of EPA laboratory network
Appendix 3: Congressional Statutes Related to EPA's Mission and Responsibilities	Showcases requirements in Congressional legislation, executive orders from the Office of the President, and Presidential Directives
Appendix 4: EPA Laboratory Facilities and Buildings	Details EPA laboratory facilities and buildings
Appendix 5: Request for Location-Specific Cost-Savings	Describes the request sent to all EPA laboratories in March 2007 for location-specific actions that improve laboratory efficiency and effectiveness
Appendix 6: Laboratory Suggestion Database	Contains the 516 suggestions for effectiveness and efficiency improvements identified by EPA employees

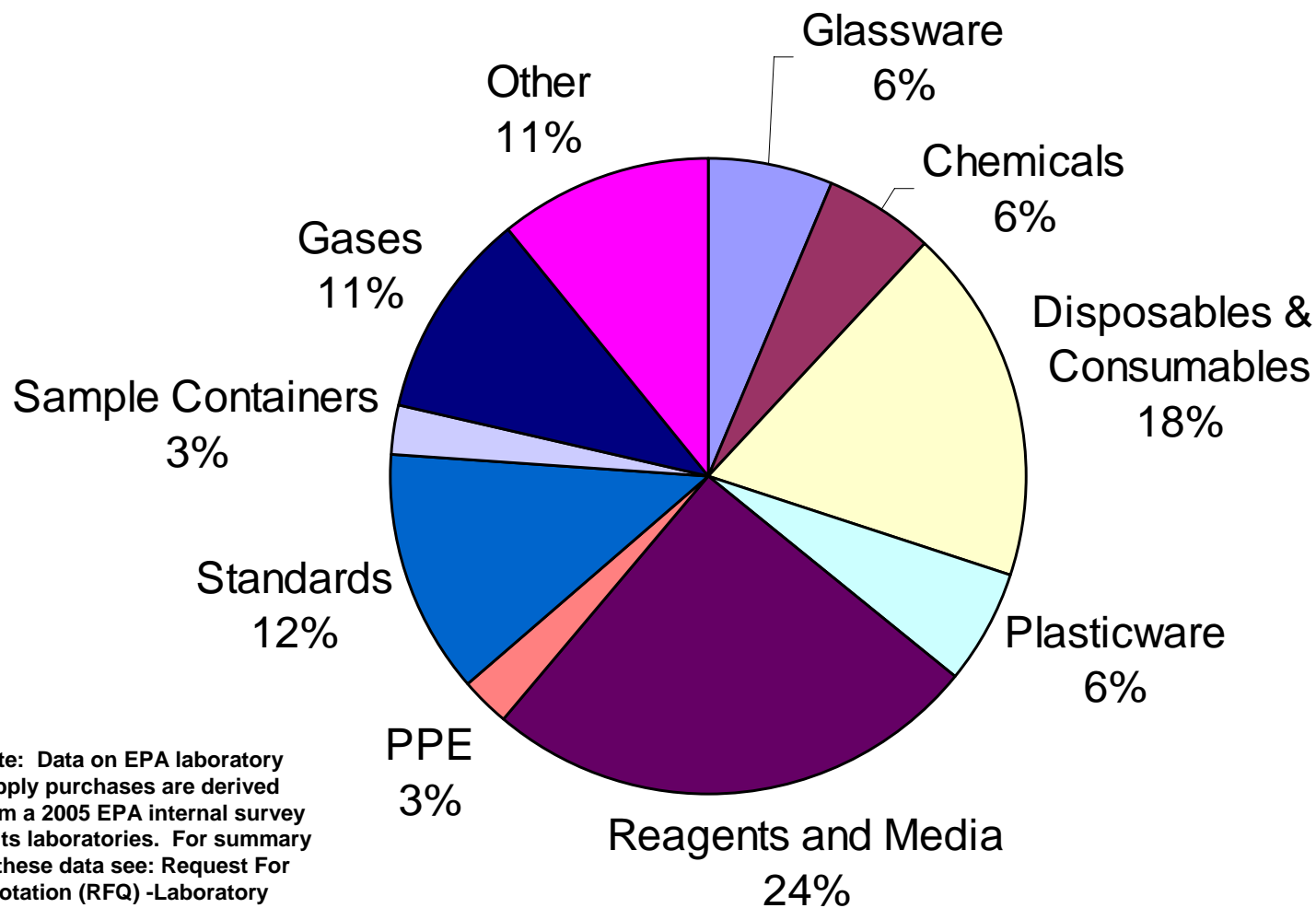
Diversity of Energy Use Reduction Initiatives

(Total number of initiatives = 235)



Cost Distribution of Laboratory Commodity Purchases in FY 2005

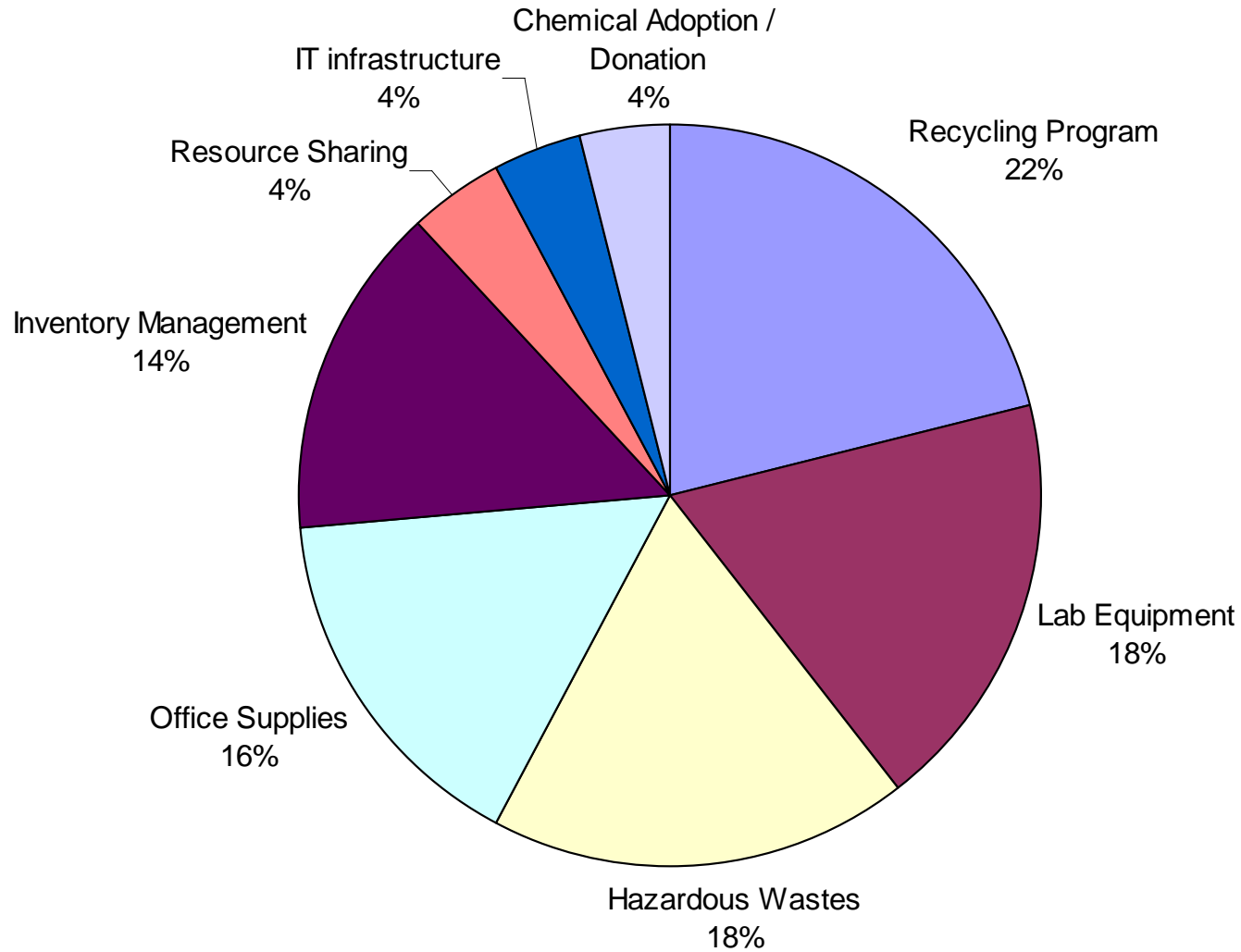
(Total dollar value of all purchases = \$7,321,304)



Note: Data on EPA laboratory supply purchases are derived from a 2005 EPA internal survey of its laboratories. For summary of these data see: Request For Quotation (RFQ) -Laboratory Supplies BPA RFQ-OH-07-00111.

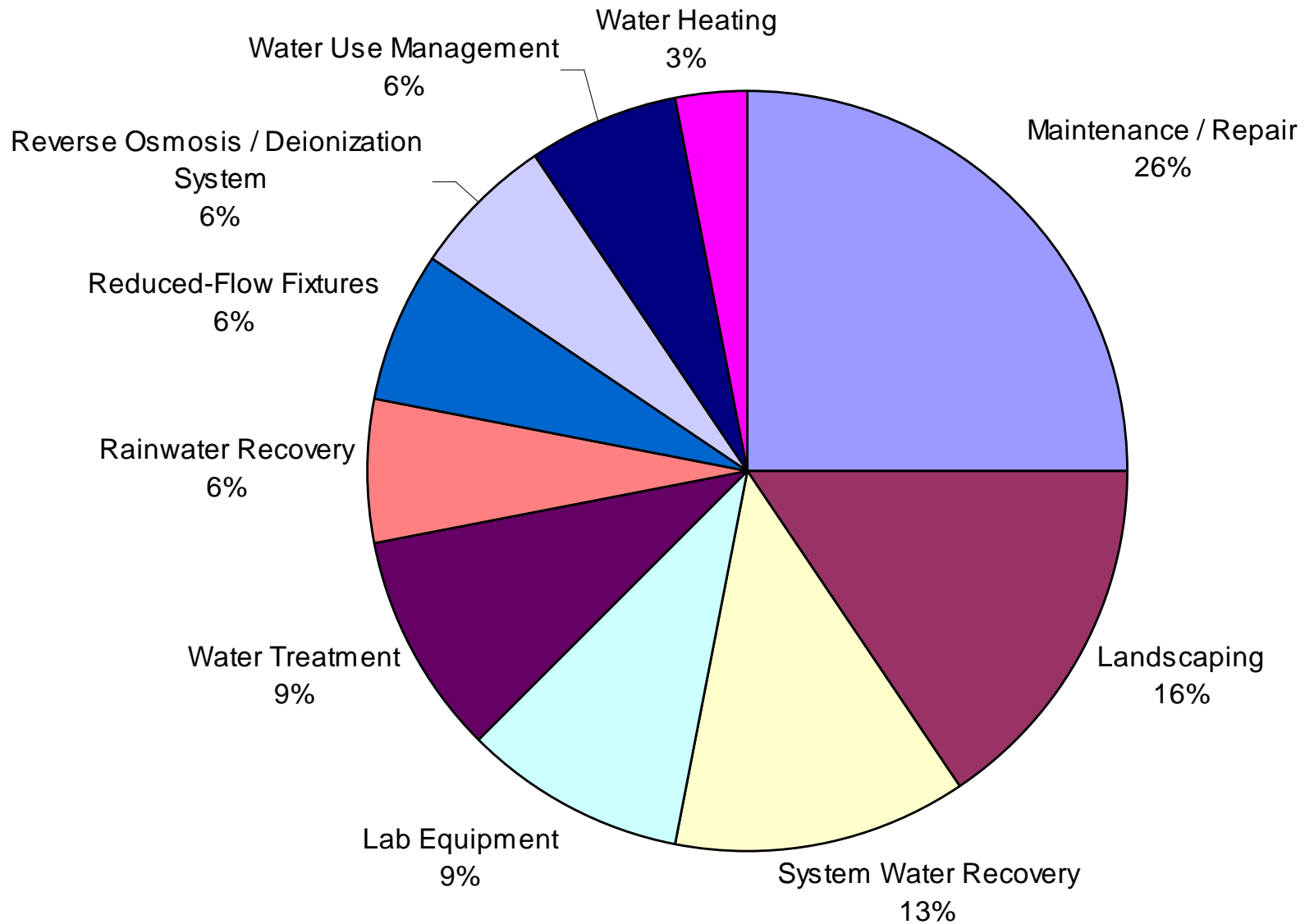
Diversity of Chemical Resource Management & Waste Reduction Initiatives

(Total number initiatives = 78)



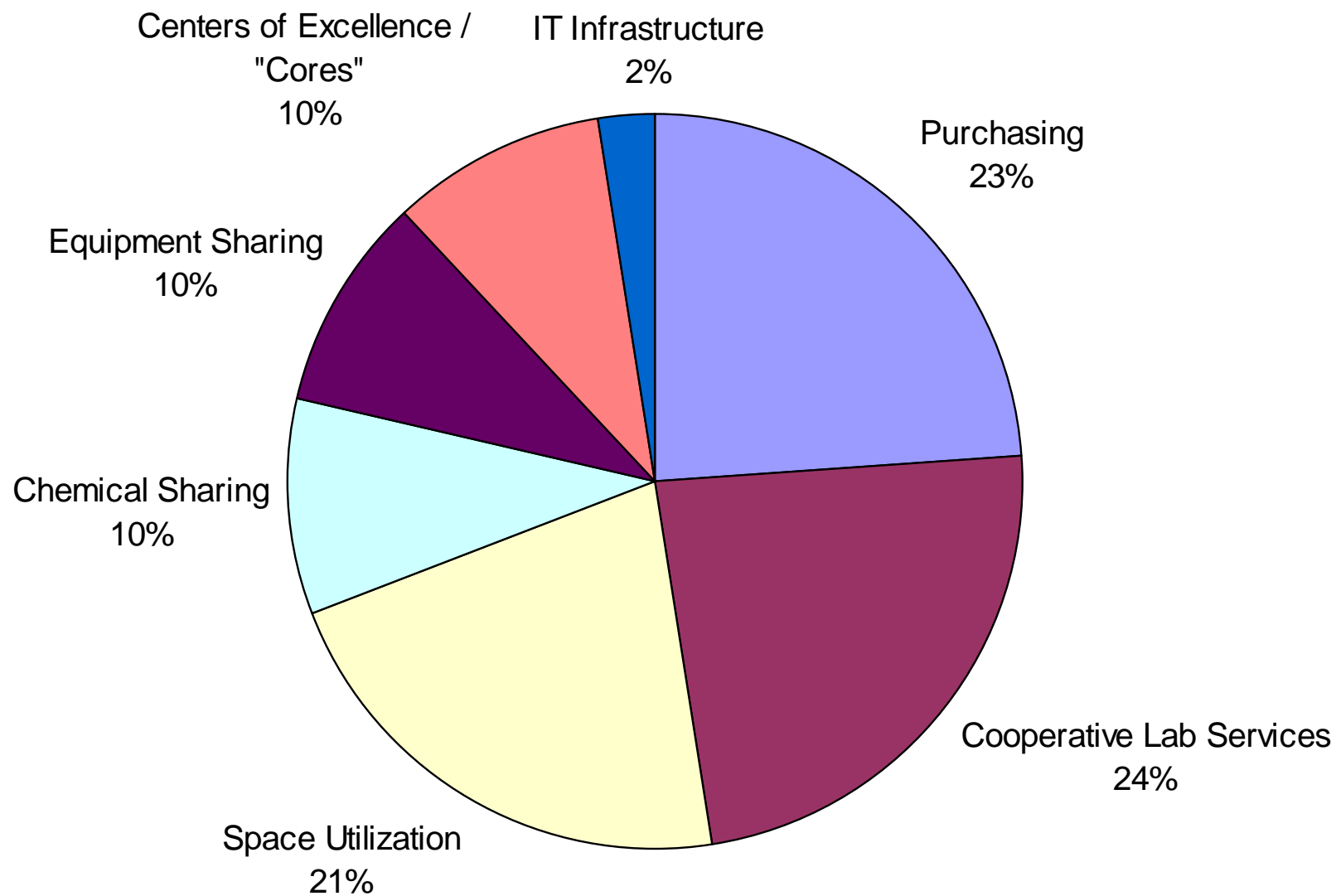
Diversity of Water Conservation Initiatives

(Total number of initiatives = 32)



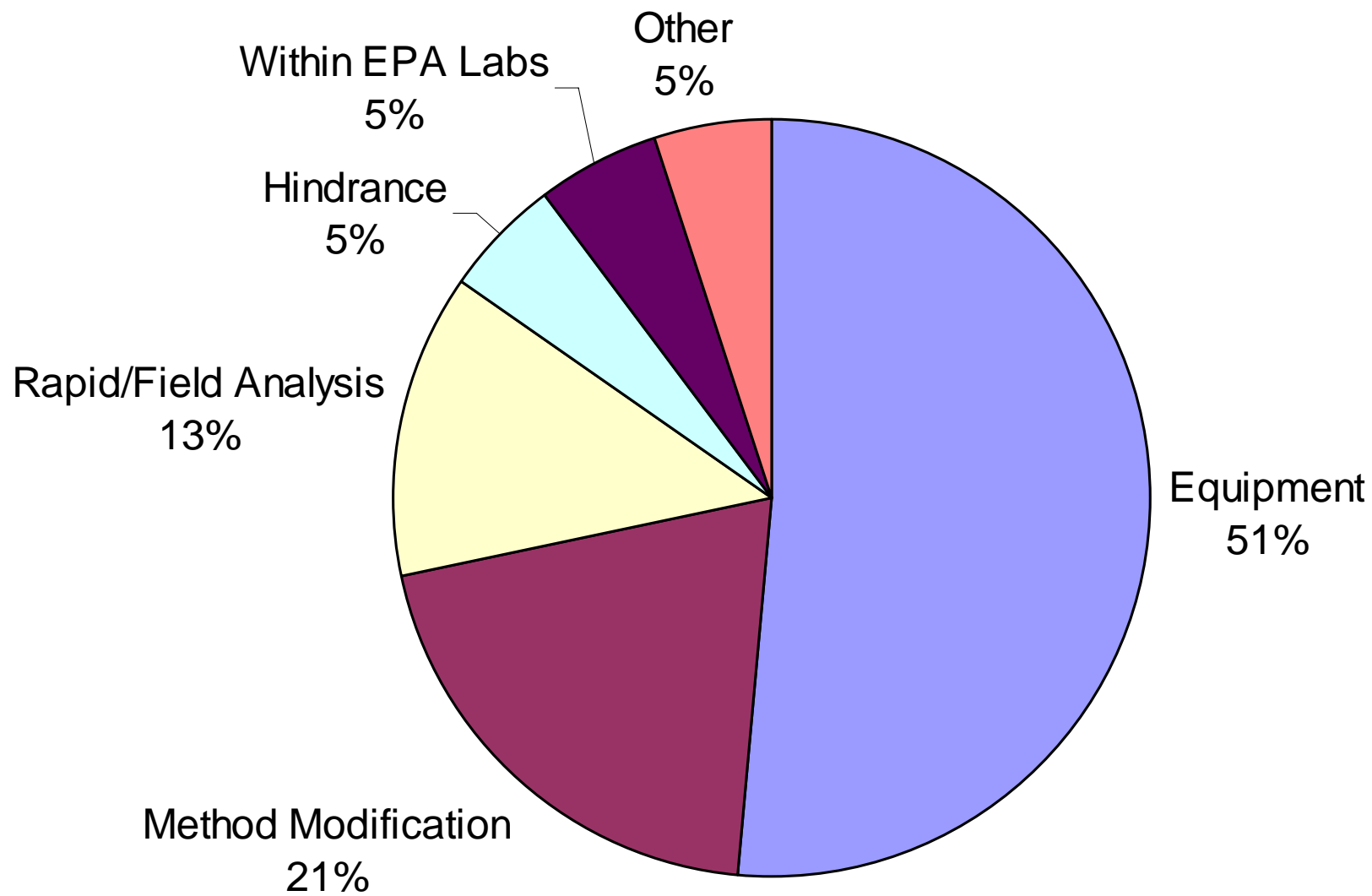
Diversity of Resource Sharing Initiatives

(Total number of resource sharing initiatives = 42)



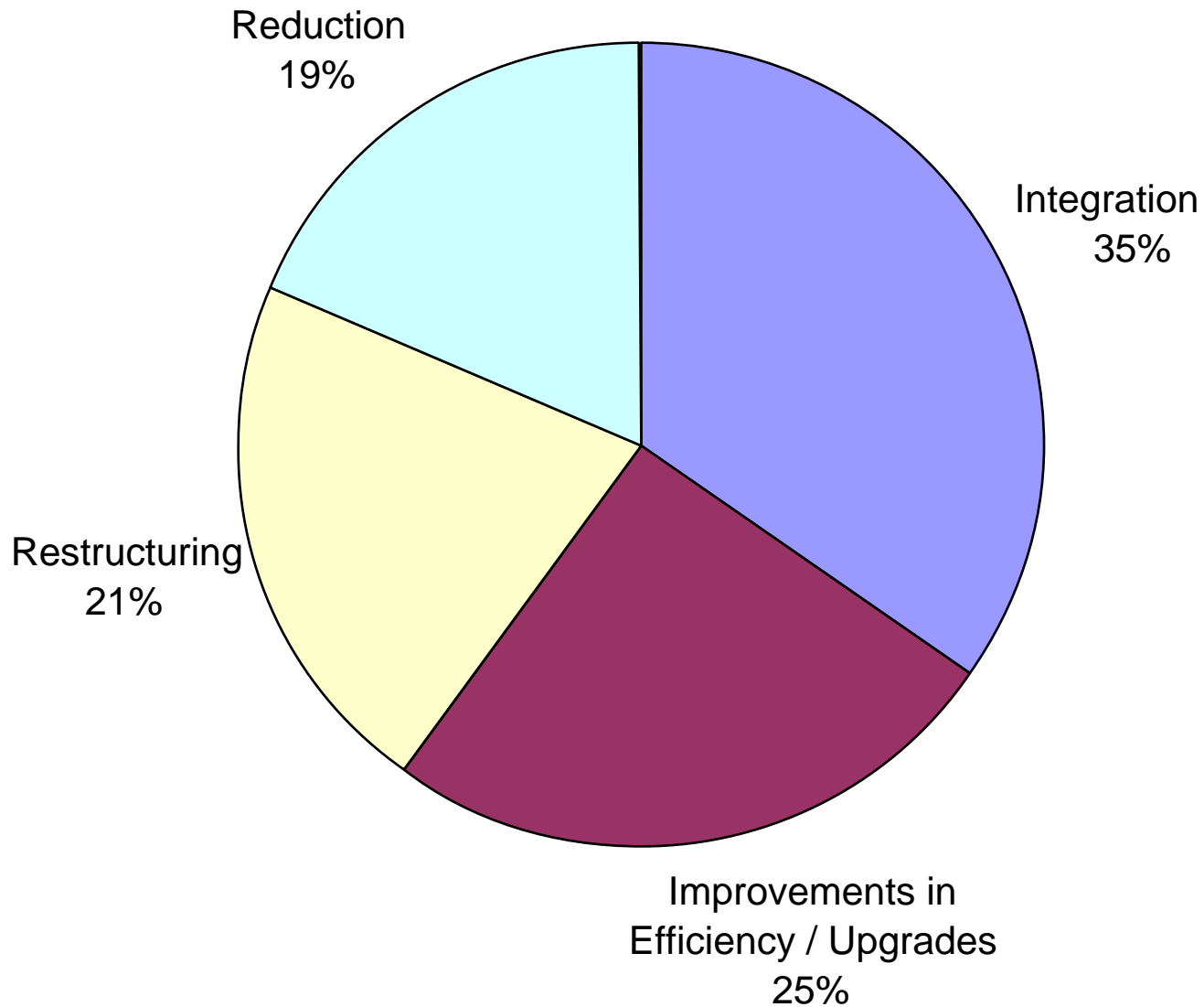
Diversity of Analytical Procedure Initiatives

(Total number of initiatives = 39)



Diversity of Other Significant Initiatives

(Total number of initiatives = 75)



Next Steps

- EPA is planning an external long-term laboratory study
- This long-term study will assess and evaluate the agency's laboratory network needs over the next 10 years, and determine if the existing network is able to meet those needs
- To conduct the long-term study, EPA has decided to engage an independent expert panel
 - Open, transparent process
 - Use of independent expert panel is consistent with best evaluation practices recognized by Congress, the White House, and the National Academies of Science