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NARPM 2009

**National Association
of Remedial Project Managers**

The Superfund Green Remediation Strategy

June 2, 2009

Moderator: Carlos Pachon

Speakers: Dan Powell, Suzanne Wells

Office of Superfund Remediation and Technology Innovation

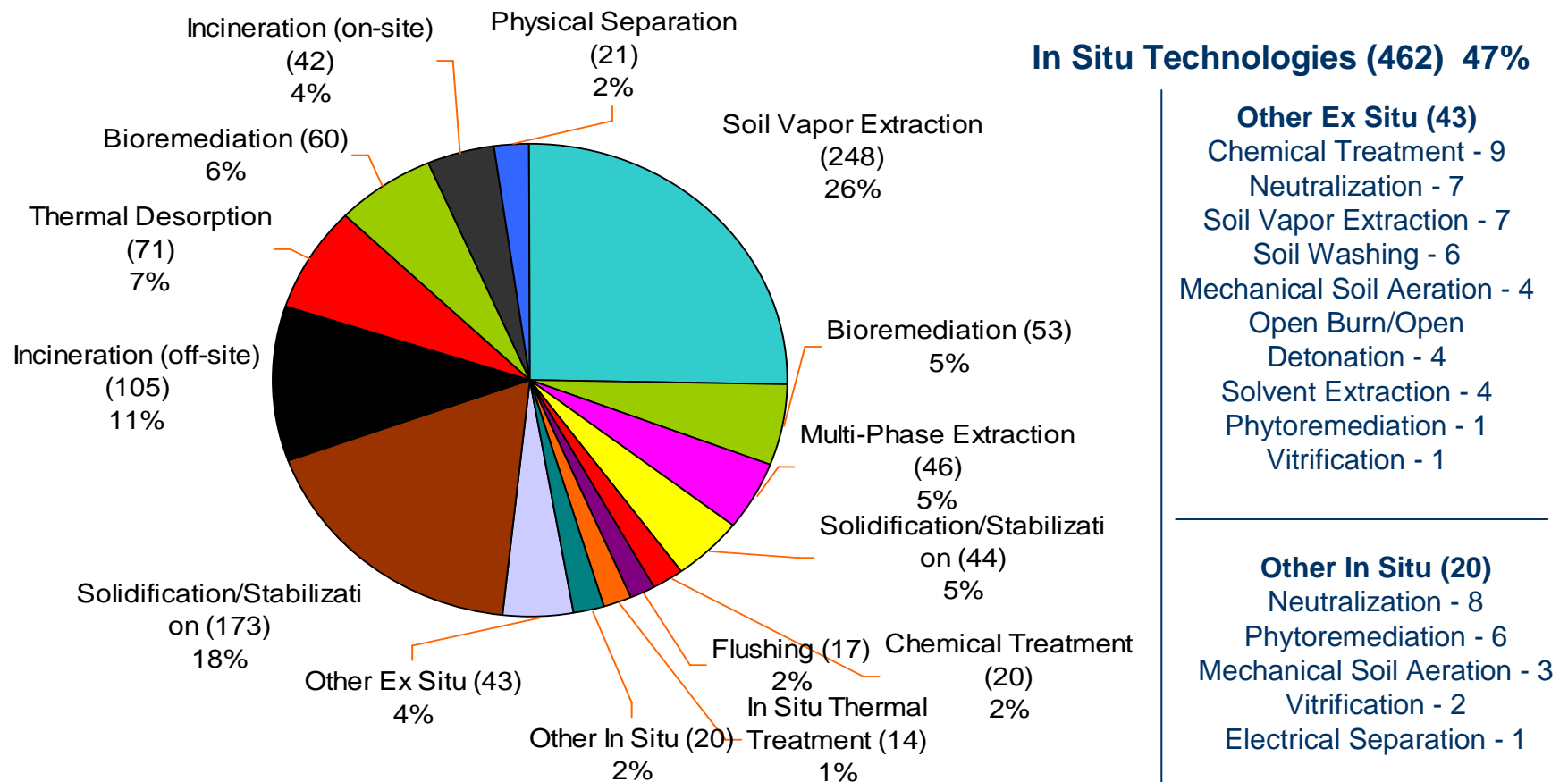
Superfund Cleanups Can Be Greener

- ★ Superfund is a large public works construction program
- ★ Superfund cleanups are estimated to use 14 billion kilowatt-hours (kWh) from the five most energy intensive treatment technologies between 2008 and 2030
- ★ Many opportunities at site and program levels
- ★ Site managers are instrumental in green cleanups
- ★ Just now starting to understand/report energy impacts



The Work of Cleaning Up Contaminated Sites

Sample subset of soil treatment technologies (Superfund, 2005-2008)*



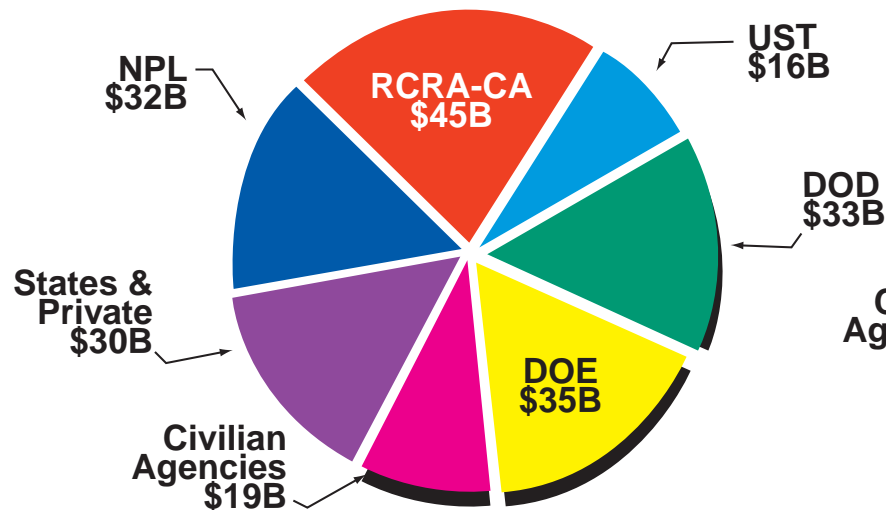
*<http://clu.in.org/asr>



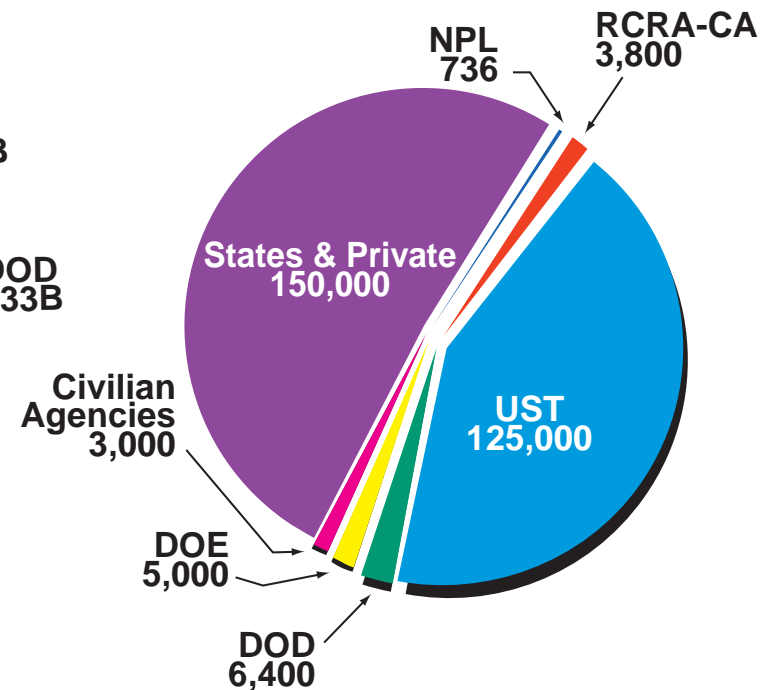
...and There's Still Much Work to Do

Estimated Number of Sites and Cleanup Cost 2004-2033*

Total = \$209 Billion



Total Sites = 294,000



What is “Green Remediation”?

Green Remediation - *The practice of considering **all** environmental effects of remedy **implementation** and incorporating options to maximize the **net environmental benefit** of cleanup actions.*



Green Remediation – A Comprehensive Focus

- ★ Apply to all cleanup programs
- ★ Exist throughout site investigation, design, construction, operation, and monitoring
- ★ Address core elements



Regions Are Leading the Way

- ★ Regional Workshops
- ★ Climate change strategies
- ★ Policy and guidance development
- ★ Green certification standards
- ★ Collaboration with states
- ★ Contracts provisions
- ★ Renewable energy projects (e.g., mining sites)
- ★ Publications, fact sheets, etc.



Regions Are Leading the Way (cont.)

- ★ Clean diesel, clean air efforts
- ★ Environmental footprint analyses, methodology; life cycle assessments
- ★ Energy use analyses and tracking

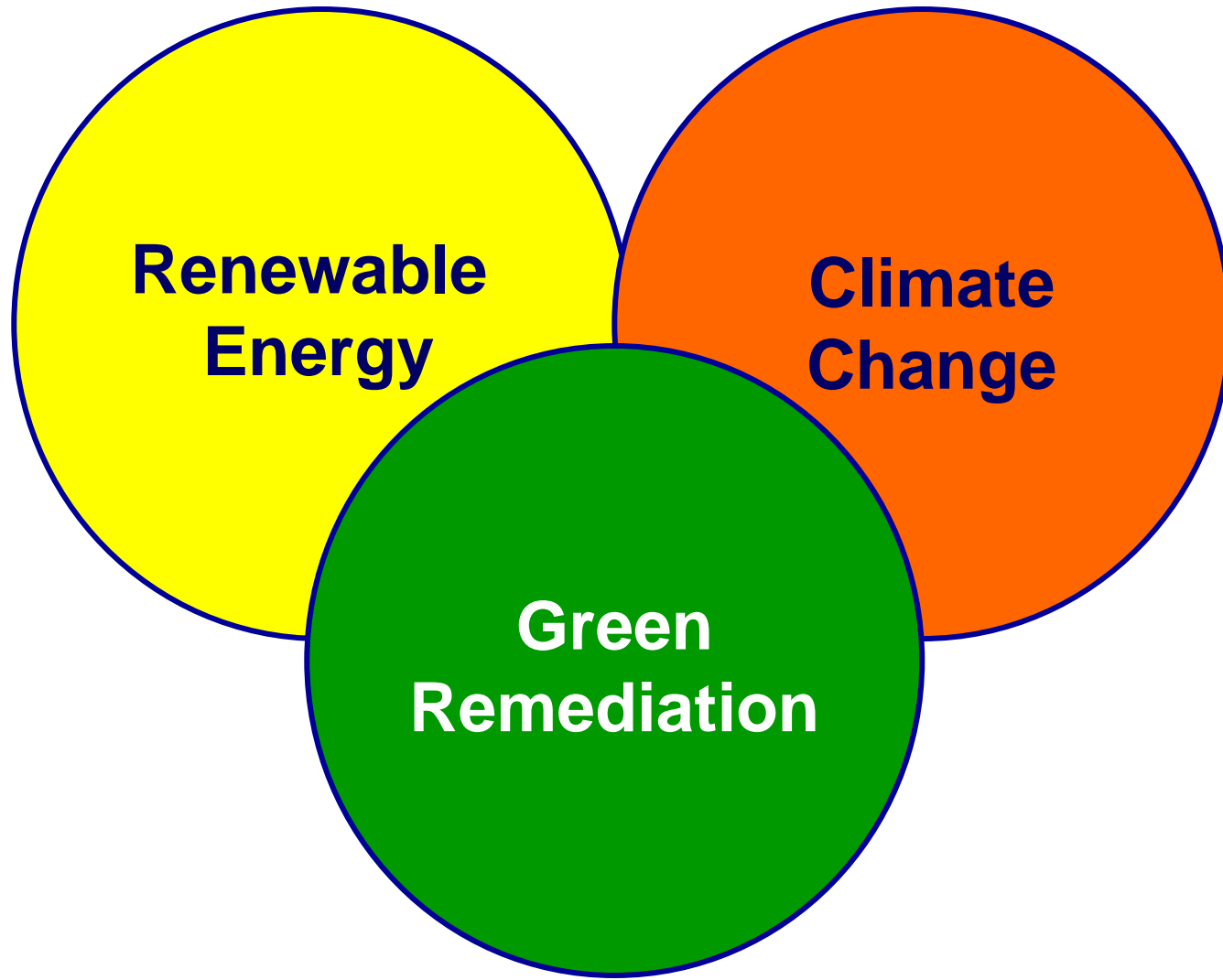


Cost Increases for Switching to Green Energy at New Jersey Sites

Site Name	Current Average Cost/Month	Sterling Planet 67% Wind 33% Small Hydro 3.5 cents/kWh for 25% of Monthly Usage		Community Energy, Inc. 100% New Jersey Wind 5.5 cents/kWh for 15% of Monthly Usage		Revised Cost/Month	
		Cost Increase/Month	Cost Increase/Month	Cost Increase/Month	Cost Increase/Month	Sterling Planet	Community Energy
Bog Creek	\$ 10,358	\$ 561	\$ 529	\$ 10,919	\$ 10,887		
Rockaway Wellfield	\$ 141	\$ 6	\$ 5	\$ 147	\$ 146		
Metaltec/Aerosytems	\$ 3,058	\$ 172	\$ 162	\$ 3,230	\$ 3,220		
Cornell-Dubilier Electronics	\$ 1,300	\$ 70	\$ 66	\$ 1,370	\$ 1,366		
White Chemical Company	\$ 846	\$ 52	\$ 49	\$ 898	\$ 895		
Horseshoe Road	\$ 3,530	\$ 184	\$ 174	\$ 3,714	\$ 3,704		
Montgomery Township HD	\$ 945	\$ 55	\$ 52	\$ 1,000	\$ 997		
Rocky Hill Muncipal Well	\$ 207	\$ 8	\$ 8	\$ 215	\$ 215		
Welsbach/GGM	\$ 4,790	\$ 286	\$ 270	\$ 5,076	\$ 5,060		
Vineland Chemical Company	\$ 25,970	\$ 1,225	\$ 1,155	\$ 27,195	\$ 27,125		
DeRewal	\$ 200	\$ 9	\$ 9	\$ 209	\$ 209		
LiPari Landfill	\$ 11,330	\$ 763	\$ 720	\$ 12,093	\$ 12,050		
Cosden Chemical and Coating	\$ 3,250	\$ 184	\$ 173	\$ 3,434	\$ 3,423		
South Jersey Clothing Company/ Garden State	\$ 5,000	\$ 333	\$ 314	\$ 5,333	\$ 5,314		
Totals	\$ 70,925	\$ 3,908	\$ 3,685	\$ 74,833	\$ 74,610		
Total/Year	\$ 851,100	\$ 46,900	\$ 44,220	\$ 898,000	\$ 895,320		



Related But Not Synonymous



Green Remediation Activities In Place

- ★ Green remediation primer, website, and profiles of projects
- ★ Internet seminars, and archived [discussions](#) (clu.in.org)
- ★ Tech support for Federal and State project managers
- ★ Contracts toolkit for RACs, ERRS
- ★ Renewable energy fact sheets and website
- ★ NARPM 4- and 8-hour training in 2008, 2009; 2009 OSC Readiness
- ★ OSWER RE-Powering America's Land Initiative



Green Remediation Activities Underway

- ★ IA with NREL
- ★ Remedy specific green remediation “cheat sheets”
- ★ Who’s who/what’s what in green remediation (EPA Intranet)
- ★ Engineering forum “GR review and technical support” capability
- ★ Green cleanup voluntary standards project
- ★ Superfund Green Remediation Strategy



RE-Power America's Land Initiative

- ★ Growing interest in locating renewable energy facilities on formerly contaminated lands
 - ✓ State Renewable Portfolio Standards
 - ✓ Environmental concerns about use of virgin lands
 - ✓ Stimulus funding and Federal/State incentives
- ★ Increasing interest at NPL sites for
 - ✓ Landfill gas-to-energy projects
 - ✓ Solar panels on existing landfill caps
- ★ Technical issues that need further study
 - ✓ Maintaining integrity of landfill caps
 - ✓ Commercial viability of landfill gas-to-energy at older landfills



Superfund Green Remediation Strategy

- ★ Effort began Fall 2008 in response to growing momentum to address climate change and make greater use of renewable energies
- ★ Overall direction – develop “strategy” to advance and address green remediation in the Superfund program and develop appropriate and relevant tools to implement the strategy
- ★ Work group comprised of HQ and Regional staff presented draft strategy January 30, 2009
- ★ Review draft to Regions, April 1, 2009



Draft Strategy - Overview

- ★ Sets out the Superfund program's plans to promote green remediation practices during site cleanups without compromising cleanup goals
- ★ Covers three areas:
 - ✓ Policy and Guidance
 - ✓ Resource Development and Program Implementation
 - ✓ Evaluation
- ★ Includes 12 "Key Actions"; each action includes activities to implement the action



Draft Strategy – Overview (*cont.*)

- ★ While green remediation is not limited to energy and climate impacts, the strategy currently focuses on reducing energy usage and greater use of renewable energies



Draft Strategy: Policy and Guidance Development

★ Key Actions

- ✓ Clarify how green remediation practices fit within CERCLA and the NCP
 - White paper, then policy
 - Assess need for regulatory changes
 - Analyze climate state and federal climate change/energy bills for potential to serve as ARARs
- ✓ Incorporate green remediation considerations into Superfund settlement agreements
 - Memo from HQ to Regions
 - Amend model consent order, unilateral order, and consent decree



Draft Strategy: Resource Development and Program Implementation

★ Key Actions

- ✓ Develop framework of protocols and tools for site managers
 - Identify resource needs vs. existing tools
 - Develop external resources (beyond OSWER)
 - Fact sheets
 - Checklists for Superfund pipeline activities (e.g., RI/FS, LTRA)
 - Training
 - Electronic notebook for RPMs/OSCs
 - Provide site-specific technical assistance



Draft Strategy: Resource Development and Program Implementation (*cont.*)

★ Key actions

✓ Develop program incentives

- Improve understanding of the environmental and human health impacts and as well as the associated costs of green remediation
- Identify opportunities to finance green technologies
- Participate/influence research funding
- Standards and certification
- Awards
- Establish Regional liaisons



Draft Strategy: Resource Development and Program Implementation (*cont.*)

- ★ Air contaminants and diesel emission reductions
 - ✓ Promote use of clean diesel and engine idle practices at all response sites
 - ✓ Fact sheet
 - ✓ Modify RACs, ERRS, contracts and PRP work plans



Draft Strategy: Resource Development and Program Implementation (*cont.*)

- ★ Incorporating green remediation aspects into contracts, IAs, and Assistance Agreements is critically important to advancing green remediation
 - ✓ Contract language (SOWs)
 - ✓ Utility usage at sites
 - ✓ Language for all pipeline activities
 - ✓ Green contracts tool kit(s)
 - ✓ Language for assistance agreements



Draft Strategy: Resource Development and Program Implementation (*cont.*)

- ★ Communication
 - Sharing successes
 - Contracting forum
 - Partner with States



Draft Strategy: Program Evaluation

- ★ Develop core evaluation measures to enable us to measure progress
 - ✓ Site level; program level
 - ✓ Evaluation, decision making
 - ✓ Reporting requirements
 - ✓ Benchmark
- ★ Identify, evaluate needs for evaluation measure implementation
- ★ White paper recommending goals
 - ✓ Project and program levels
 - ✓ National goals, e.g., 20% energy efficiency, 15% renewable energy by 2015



Strategy-Related Efforts Underway/In Place

- ★ Measures group
- ★ Policy white paper(s)
- ★ Identifying:
 - ✓ Pilots
 - ✓ Liaisons
- ★ Information and training
- ★ Regional policies



Operating Principles - Policy

- ★ Operating under premise that remedies must:
 - ✓ Be protective of human health and the environment
 - ✓ Meet applicable regulatory and regulator requirements
- ★ Analyses underway to look at applicability of NCP, nine criteria to green remediation principles:
 - What can we mandate or encourage
 - How can we protect against “green=minimal or no action”
 - Perspective of new climate change, energy, green laws and regulations as ARARs



Pilots – Learning from Each Other

- ★ Regional pilots
- ★ OSWER Innovations pilots
- ★ Begun incorporating green remediation into optimization projects
- ★ Support RE-Powering America's Land's Initiative to identify information from Superfund sites with high renewable energy potential
 - ✓ Solar
 - ✓ Wind
 - ✓ Landfill methane to energy



Measures Subgroup

- ★ Goal: Making informed decisions on reducing the environmental footprint of cleanups at a site
- ★ Anticipated product: A methodology for evaluations environmental footprints
 - ✓ Air quality, energy and climate; water; land and ecosystems; materials & waste; long term stewardship
- ★ Status: Three evaluations completed, three in the pipeline. Your participation is valued!
- ★ Timeline: Draft air quality, energy and climate (GHG) methodology for July



Technical Support for Site Managers

- ★ In-kind no-cost support
 - ✓ Breakdown of the environmental footprint of your remedy and options for reducing it
 - ✓ Renewable energy potential for your remedy
- ★ Sample projects completed or underway:
 - ✓ Marathon Oil, IL EPA – green remediation at an oil spill (removal).
 - ✓ Baird & McGuire – Carbon and energy footprint analysis and options for reducing them.
 - ✓ Shepley's Landfill – environmental footprint analysis and recommendations couple with an RSE.

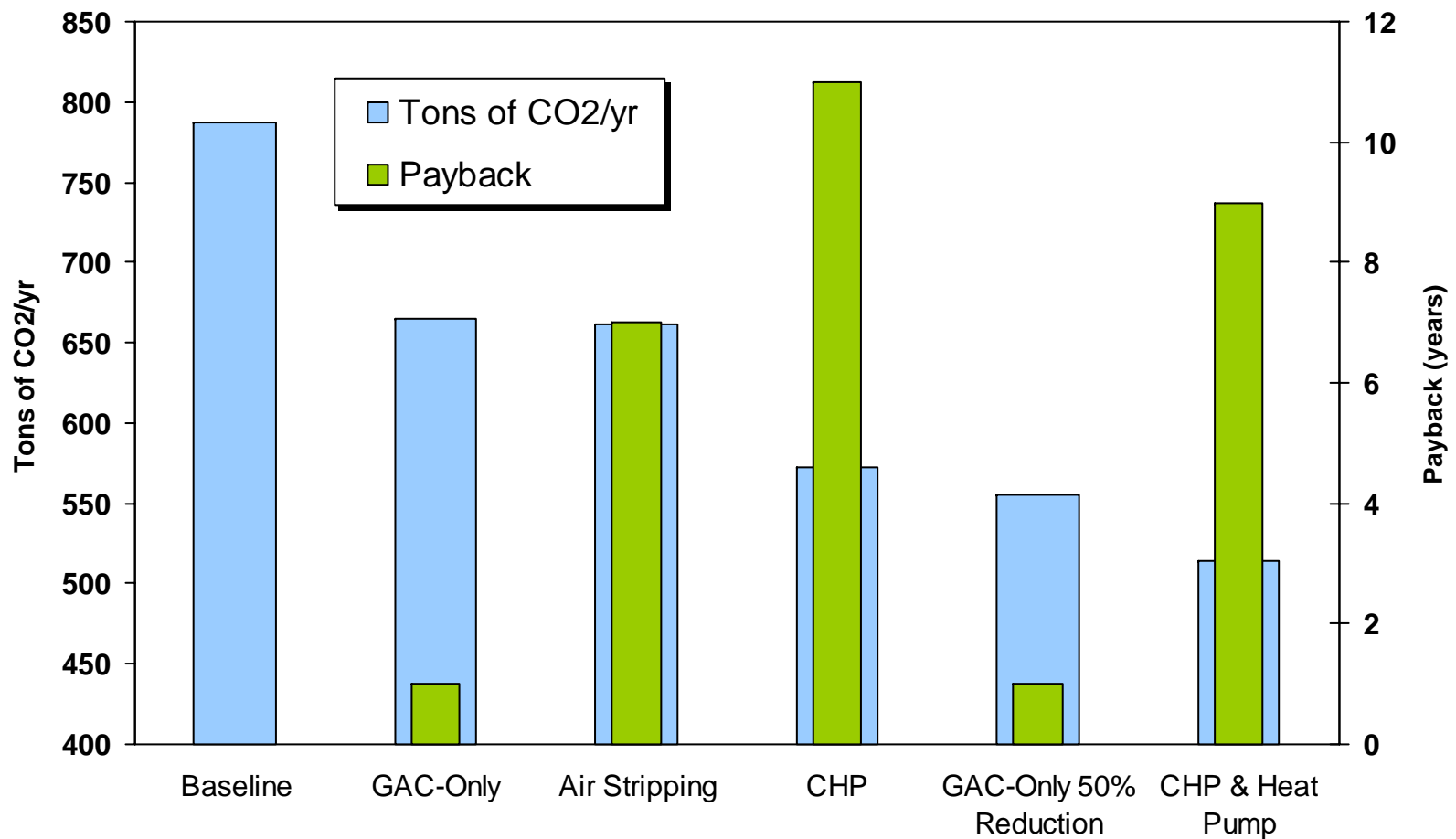


Reductions of Carbon Footprint and Cost at B&M

Option	% Reduction	
	Carbon Footprint	Annual O&M Cost
GAC-only	16%	4%
Air stripping	16%	6%
CHP	27%	5%
GAC-only (50% reduction)	29%	9%
CHP & heat pump	35%	7%



Payback of B&M Options



Leveraging Other Efforts (*We're Not Alone*)

★ Other Federal agencies

- ✓ Federal Remediation Technologies Roundtable
 - Green Remediation Subgroup
 - Exploring Actions, compiling “tools”
- ✓ DoD/Military Services
 - Policies
 - Contracting
 - Examples/case studies
- ✓ DOE
 - NREL IA
 - Support IAs with Argonne, USACE
 - More examples



Leveraging Other Efforts (*We're Not Alone*)

★ Other Federal agencies (cont.)

- ✓ Other agencies (e.g., NASA)

★ States

- ✓ ASTSWMO
- ✓ ITRC
- ✓ Individual states
 - Illinois
 - California
 - Others

★ Industry



Communication

- ✦ Share draft strategy widely to gather comments and additional ideas
- ✦ Finalize strategy by June 30, 2009
- ✦ Listening meetings/public comments
- ✦ Update and revise as necessary



Implementation

- ★ Workgroup has identified a number of priority projects to begin work in FY09 that make sense from a program management perspective
- ★ Develop an implementation plan; assign responsibilities and schedule
- ★ See earlier slides (*Activities Underway*)



Recognized Needs

- ★ Training (targeted)
- ★ Contract language
- ★ Better information on goods and services
- ★ Competing decision tools



Role of the RPM

- ★ RPMs will make this happen
 - ✓ Share information/your field experience can help other site managers
 - ✓ Be knowledgeable of green remediation policies
 - ✓ Find opportunities to take action at your sites
 - ✓ Understand and control energy impacts of technologies
 - ✓ Pursue continuing education
 - ✓ Identify opportunities to integrate principles into contracts (existing contracts, new solicitations)
 - ✓ Facilitate and encourage actions of others (e.g., PRPs, Federal agencies, states)



Discussion

- ★ Comments and concerns
- ★ Sharing experiences
- ★ Needs

