



The First Regional Greenhouse Gas (GHG) Assessment for USMC Bases in California and Arizona

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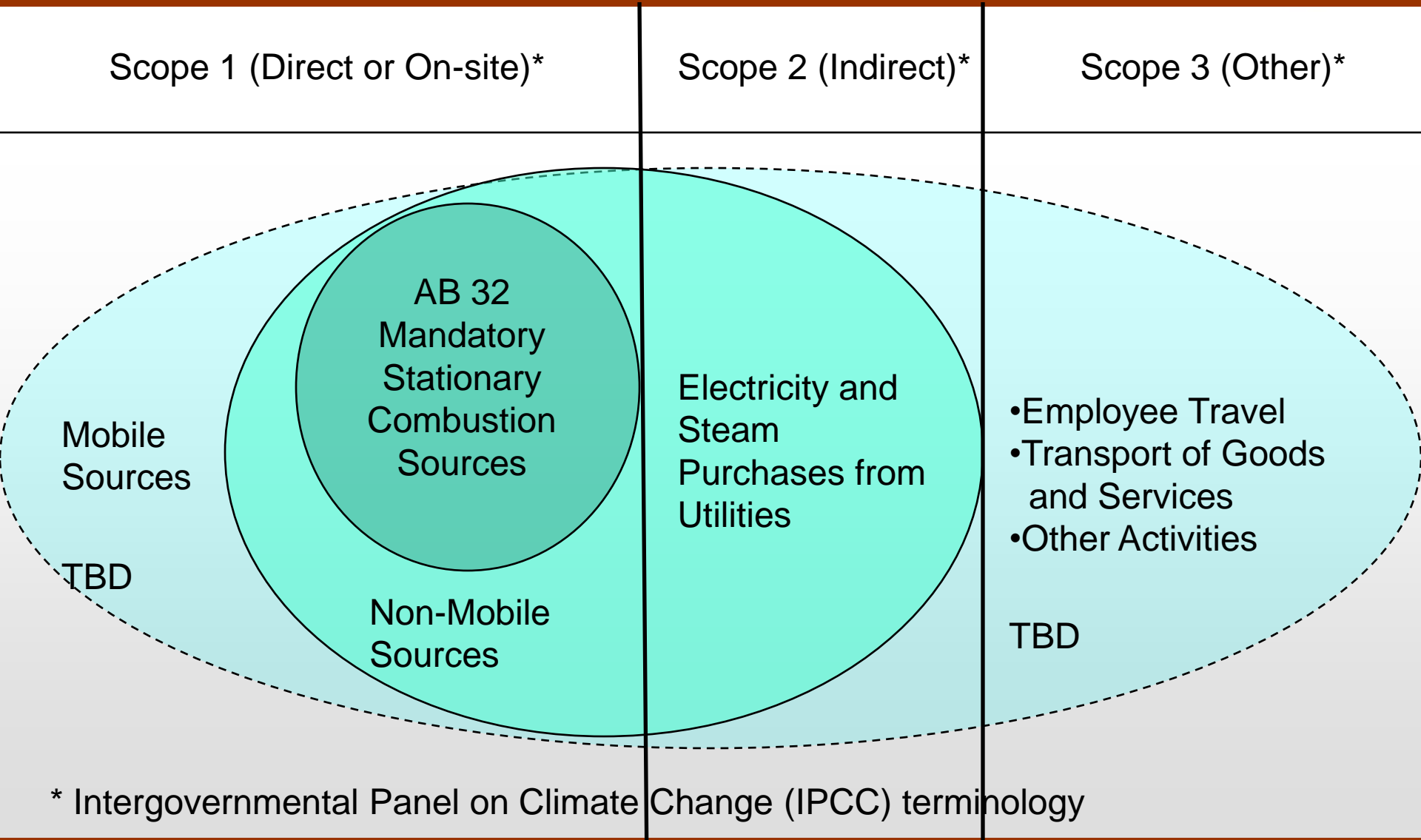
2009 Federal Environmental Symposium – Bellevue, WA
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Drivers and Goals of Regional GHG Assessment



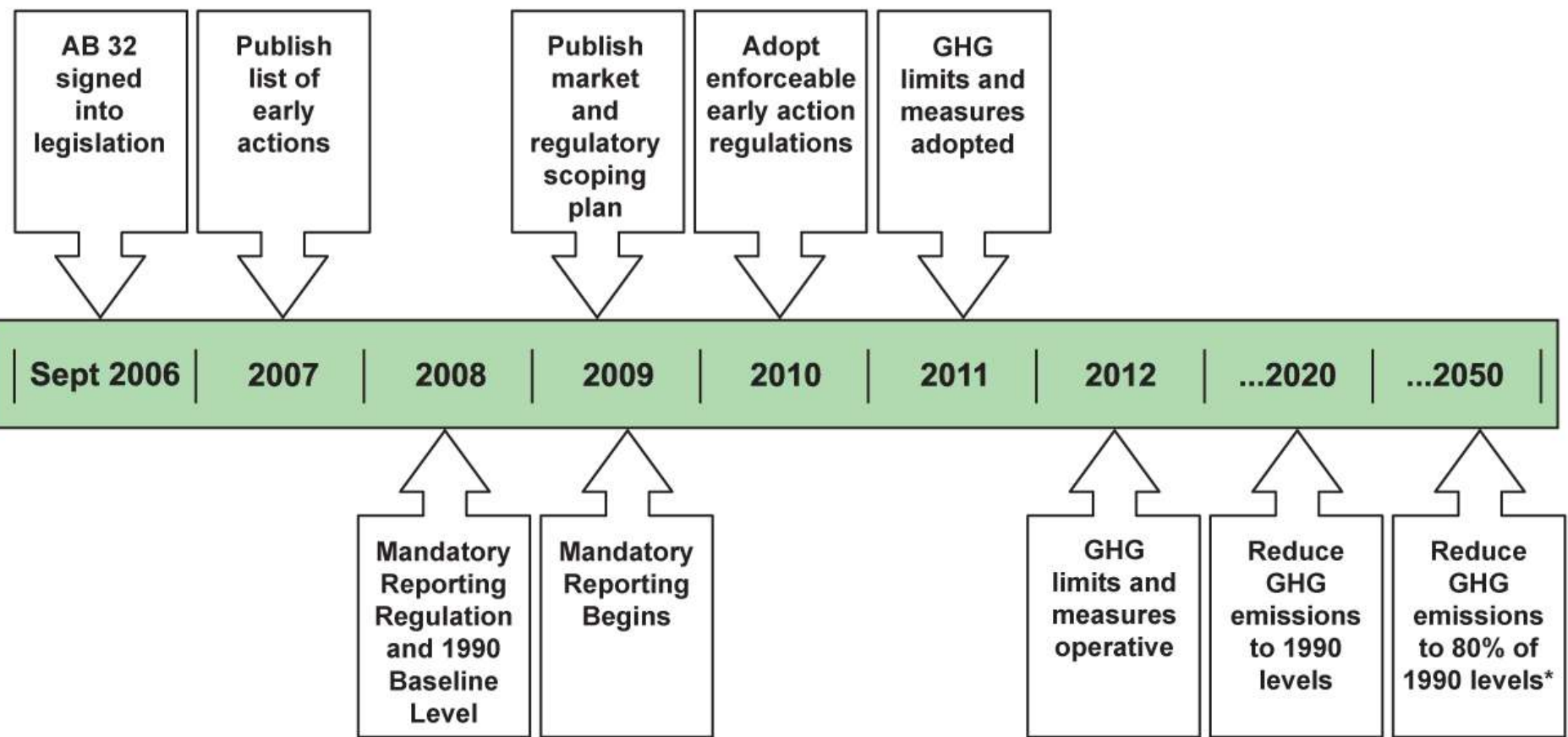
- Driver: April 2007 Supreme Court Decision (Mass. vs. EPA) --ruled that GHGs can be regulated as air pollutants under the CAA
- Provide a GHG inventory and assessment of all stationary and portable (i.e., non-mobile) sources associated with USMC bases in CA and AZ
 - Determine which facilities are subject to mandatory reporting under Assembly Bill (AB) 32
 - Identify which of ARB's early action measures (EAMs) will impact USMC operations.
- Identify past and future projects within USMC bases in CA and AZ which produce reductions in GHG emissions to possibly support NEPA documentation.

Extent of Green House Gas (GHG) Survey at MCI West





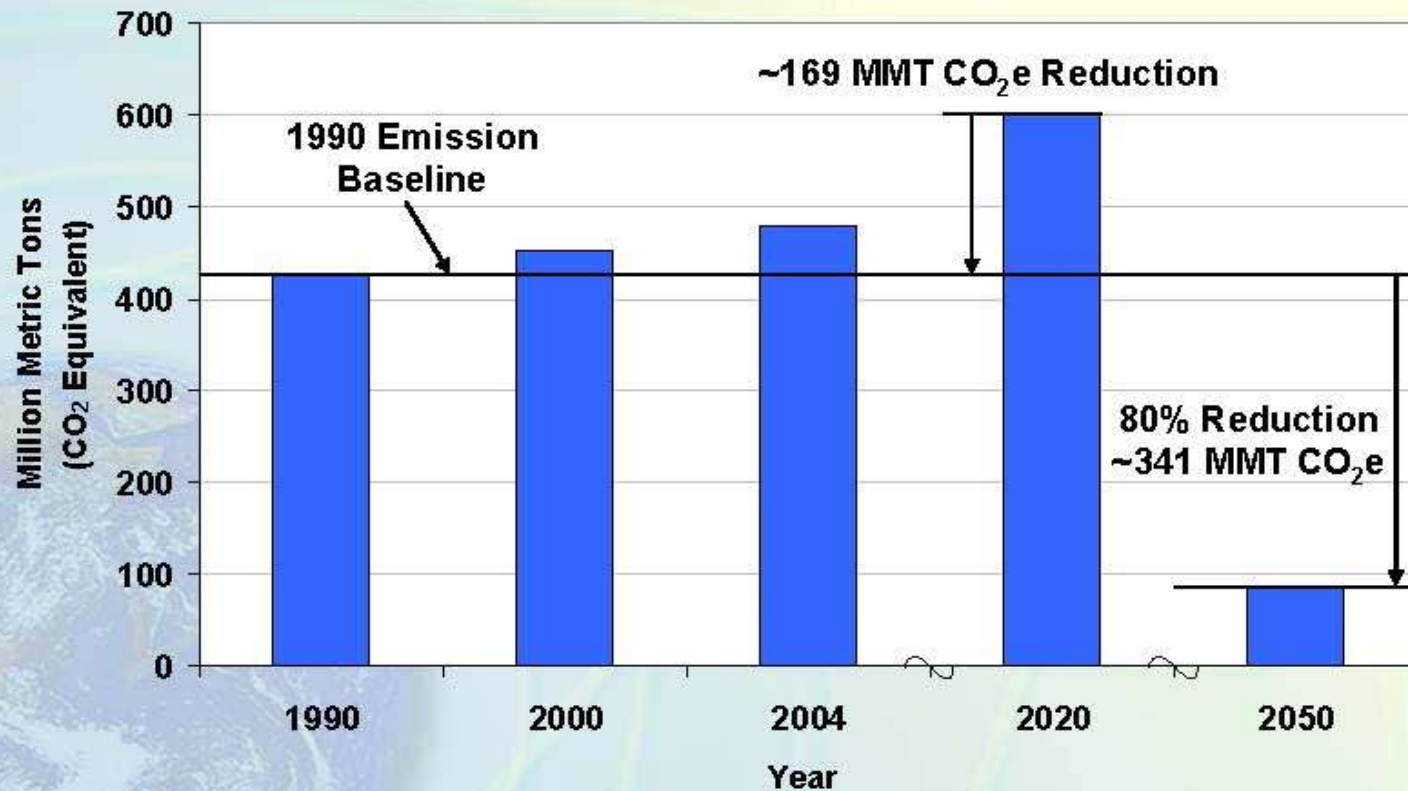
GHG Timeline For California



* NOTE: 2050 goal is a result of Executive Order S-3-05, not AB 32.

Magnitude of the Challenge

ARB Emissions Inventory





Major Provisions of AB 32

- Establish the 1990 Baseline
- Development of Scoping Plan
- Mandatory Reporting for Certain Facilities
- Early Action Measures
- Cap-and-Trade Program

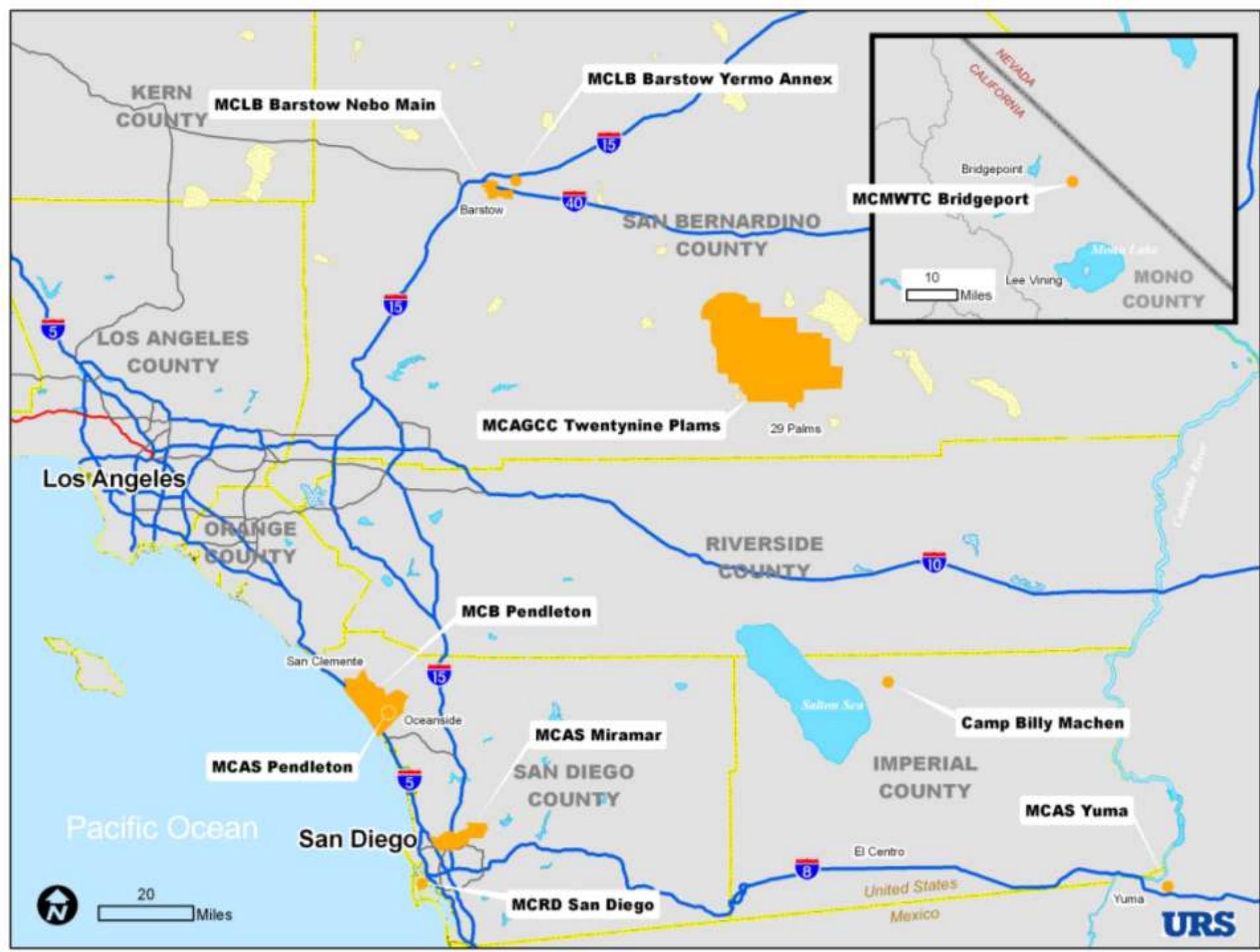


PART 1 OF FENCELINE-TO-FENCELINE INVENTORY



Facilities Included:

- Marine Corps Base (MCB) Camp Pendleton
- Marine Corps Air Station (MCAS) Camp Pendleton
- MCAS Miramar
- Marine Corps Logistics Base (MCLB) Barstow
- Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms
- Marine Corps Mountain Warfare Training Center (MCMWTC) Bridgeport
- MCAS Yuma including Chocolate Mountain Range Complex
- Marine Corps Recruit Depot (MCRD) San Diego





GHG Sources Inventoried*

1. Direct GHG Emissions

- Stationary Sources:
 - Internal Combustion
 - External Combustion
 - Dynamometers
 - Jet Engine Test Cells
 - Thermal Oxidation
 - Cogeneration
 - Crash/Fire/Rescue Training

- Fugitive Sources:
 - Landfill
 - Refrigerant Use
 - Miscellaneous Material Usage
 - Total Flooding Fire Fighting Systems
- Process Sources:
 - Wastewater Treatment
 - Oil/Water Separators

2. Indirect GHG Emissions:

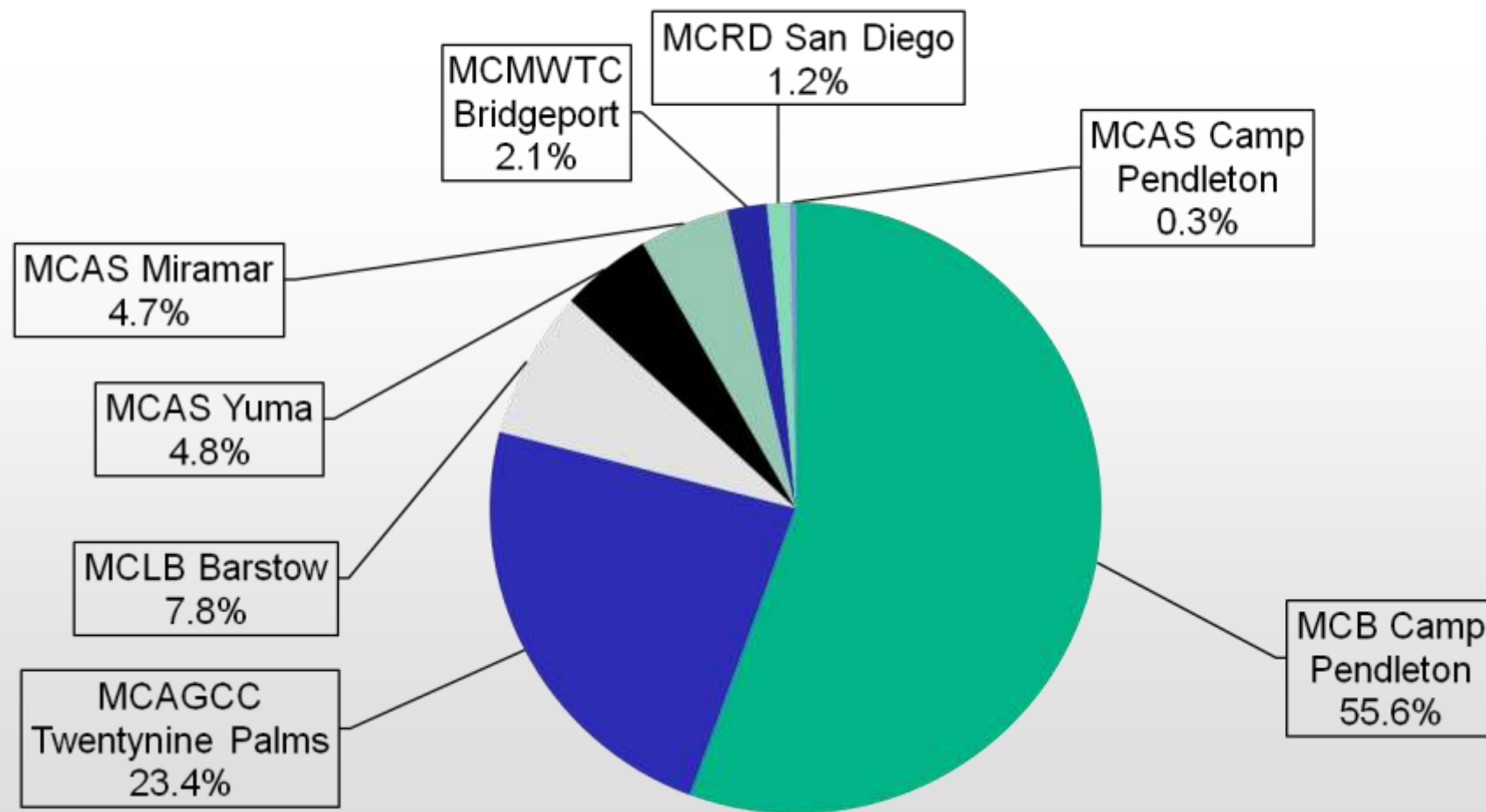
- Electricity
- Steam

*AB 32 Mandatory Reporting Protocol and AP-42 were used.

Results of Regional Fenceline-to-Fenceline GHG Inventory



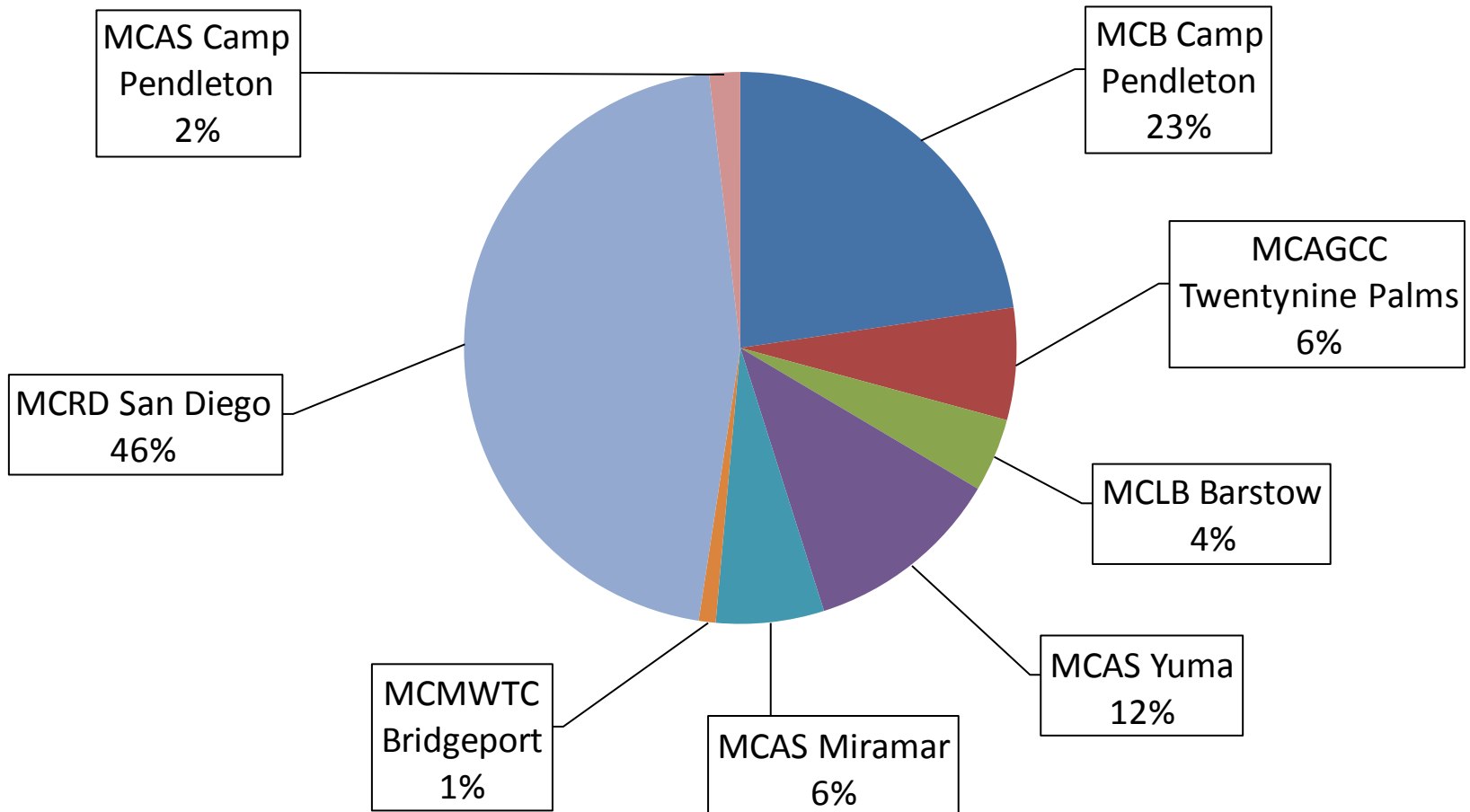
Direct GHG Emissions



Results of Regional Fenceline-to-Fenceline GHG Inventory



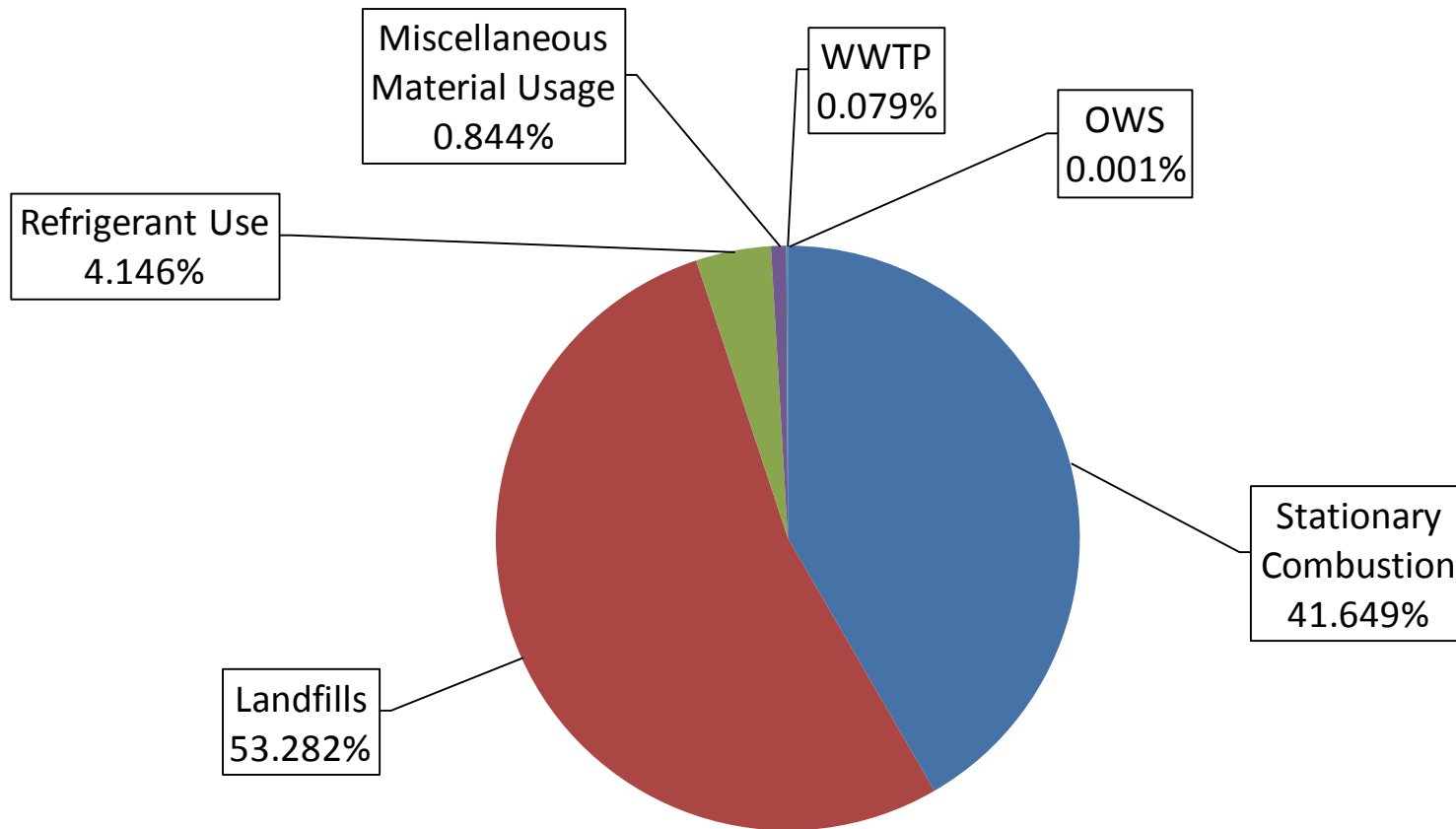
Indirect GHG Emissions



Results of Regional Fenceline-to-Fenceline GHG Inventory



Direct GHG Emissions by Source Category



Unusual Sources of GHG Emissions



Facility	Description
MCAS Camp Pendleton	Dry ice blocks for aircraft maintenance
MCRD San Diego	Cylinders of CO ₂ for pH control in swimming pool
All bases except MCMWTC Bridgeport	Aerosol cans with power duster, canned air and corrosion prevention products
MCLB Barstow	Dry ice blasting for cleaning of delicate parts



AB 32 THRESHOLD – TECHNICAL EVALUATION



AB 32 Applicability Evaluation

■ Reporting Thresholds:

a) $\geq 25,000$ MT CO₂ for stationary combustion sources

- Boilers, heaters, cogeneration units, dynamometers/IC engine test cells, generators (non-emergency), crash/fire/rescue training, etc.

b) $\geq 2,500$ MT CO₂ and Prime Electricity Generator(s) ≥ 1 megawatt (MW)

c) $\geq 2,500$ MT CO₂ and ≥ 1 MW for Cogeneration Facilities

AB 32 Reporting Applicability Results



USMC Facility	Stationary Combustion \geq 25,000 MT CO ₂	Cogen Facilities \geq 2,500 MT CO ₂ and \geq 1 MW
MCAGCC Twentynine Palms	Yes	Yes
MCB Camp Pendleton	No	No
MCAS Miramar	No	No
MCLB Barstow	No	No
MCMWTC Bridgeport	No	No
MCRD San Diego	No	No
MCAS Camp Pendleton	No	No
MCAS Yuma (California)	No	No
MCAS Yuma (Arizona)	N/A	N/A

Current Impacts of Mandatory Reporting



- MCAGCC Twentynine Palms is the only facility reporting at present

- Annual report was submitted 1 June 2009; in subsequent years, reports are due 1 April

- 3rd Party Verification:
 - Due triennially beginning in 1 October 2010
 - Must use state-approved, independent verifier



EARLY ACTION MEASURES



Early Action Measures (EAMs)

- Scoping Plan by ARB contains 74 GHG reduction measures
- 44 EAMs with effective dates beginning 2010
- These are command-and-control type rules
- EAM applicability is independent from mandatory reporting thresholds and determination
- Rule-making and public hearings are ongoing with ARB



EAMs Impacting USMC in CA

1. Landfill methane capture and control
 - Threshold is 450,000 tons of waste-in-place (WIP)
 - Annual reporting beginning on 15 March 2011
 - Submittal of a design plan and installation of gas capture system within 12 and 18 months, respectively after effective date of regulation
 - CERCLA landfills are exempt
 - Landfills closed prior to 1977 are exempt

Status of Landfills



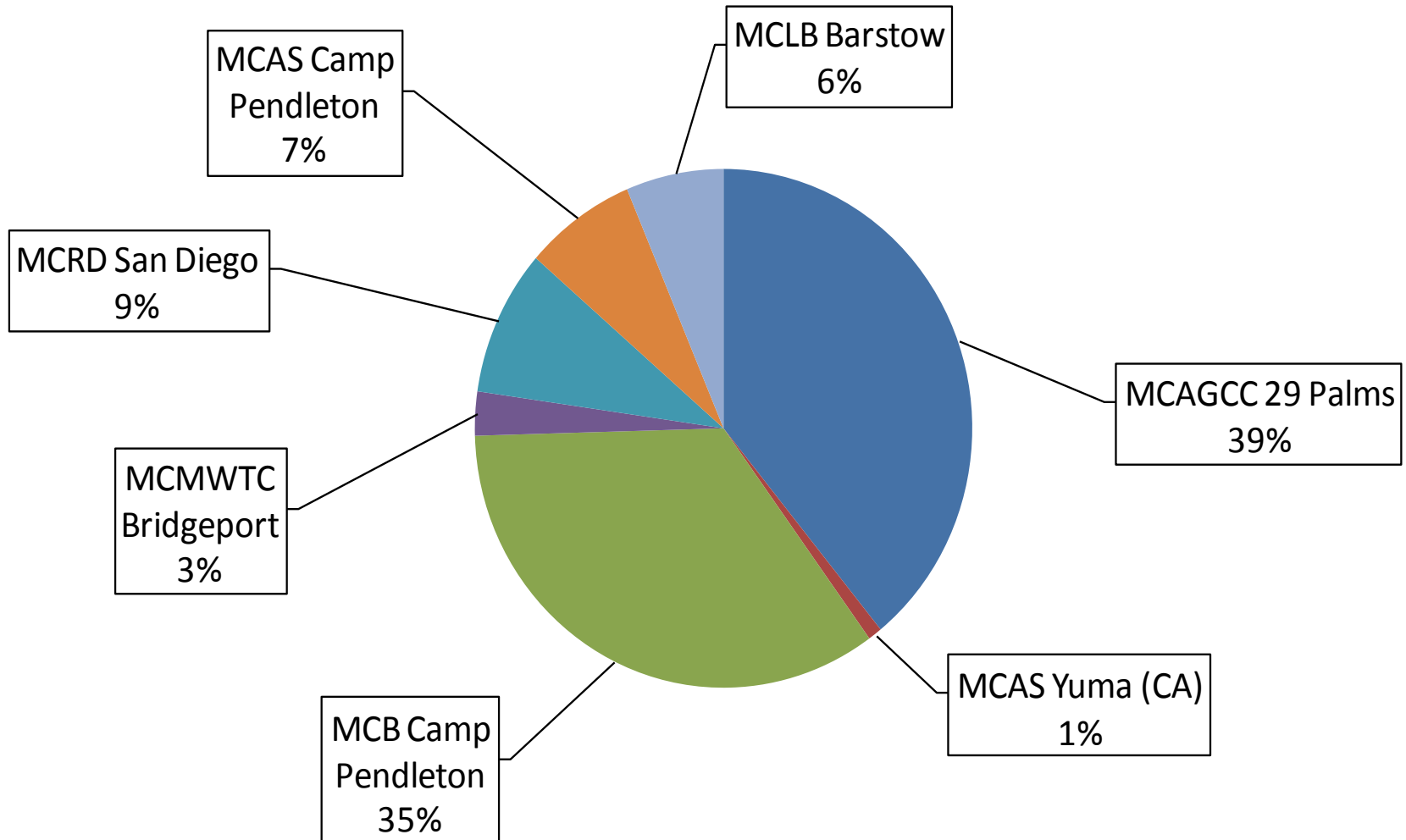
Base	Landfill Name	Subject to Landfill Gas Capture Rule at present?	Rationale
MCB Camp Pendleton	Box Canyon	No	IRP site
	Las Pulgas	Yes	Exceeds 450,000 tons WIP
	San Onofre	Yes	Exceeds 450,000 tons WIP
MCAS Yuma	Southeastern Portion of Base	No	IRP site; closed in 1961
MCMWTC Bridgeport	Pickel Meadow	No	IRP site; closed in 1975
MCAS Miramar	Miramar Landfill	No	Leased and operated by the city
MCLB Barstow	CAOC 7, CAOC 23, CAOC 35	No	Below 450,000 tons WIP
MCAGCC Twentynine Palms		No	Monitor WIP - estimated to trigger rule by 2024

2. High GWP Refrigerant Requirements



Regulatory Requirement	Refrigerant Charge		
	Large (>2000 lbs)	Medium (200-1999 lbs)	Small (50-199 lbs)
Register existing equipment	8-31-2011	8-31-2013	7-1-2014
Register new equipment	8-31-2011	8-31-2013	7-1-2014
Leak Detection and Monitoring	Automatic Leak Detection by 7-1-2010	Quarterly Leak Inspections After 7-1-2010	Annual Leak Inspections After 7-1-2010
Reporting Frequency	Annually	Annually	N/A
First Reporting Date	8-31-2011	8-31-2013	N/A

HVAC&R Systems Affected by High GWP Refrigerant Rule



Other EAMs Affecting USMC in CA



EAM Description	Estimated Implementation Date
Reduction of high GWP GHGs used in consumer products	2010
Reduction of HFC-134a from do-it-yourself servicing and dismantling of motor vehicle air conditioners	2010
Tire inflation	2010
Alternative fire suppressants (HFCs to protect computer and communication systems)	2011
Foam recovery and destruction (used as insulation)	2010
Specifications for commercial refrigeration	2012
Cool automobile paints	2012



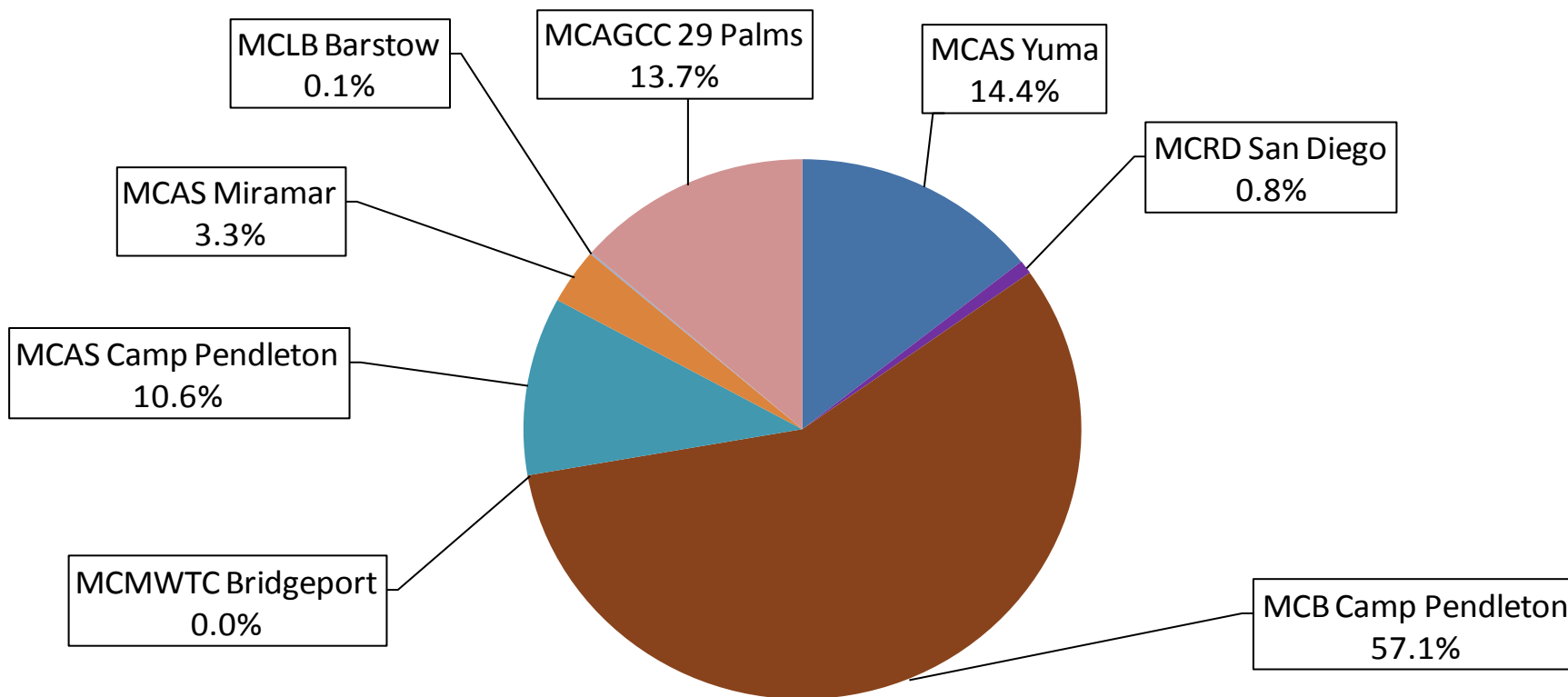
CARBON REDUCTIONS AND CREDITS



Reductions in GHG Emissions

- USMC's goal is to identify past and future projects within bases in CA and AZ which produce reductions in GHG emissions.
 - May allow greater flexibility for facility changes and mission-critical operations
 - Demonstration of environmental stewardship and sustainable operations

Previous GHG Reductions 2003-2008





Typical GHG Reduction Projects

- Energy efficiency
 - Boiler upgrades and retrofits
 - Energy improvements (i.e., lighting, DDC controls, CFLs, LEDs, etc.)
 - HVAC&R repairs & upgrades
- Steam turbine and cogeneration
- Photovoltaics and solar thermal
- Xeriscaping (minor savings in CO₂e, but saves water)
- Elimination of digester gas

USMC's Planned GHG Reductions in CA and AZ



- Wind power at MCMWTC Bridgeport and MCLB Barstow
- More photovoltaics at most bases
- More xeriscaping, especially in the desert
- Landfill gas capture – MCB Camp Pendleton
- Lighting upgrades and delamping



PATH FORWARD



Planned and Funded Tasks

- Re-assess sources and emissions according to draft EPA Mandatory Reporting rule published in April 2009
 - Preliminary review indicates that MCB Camp Pendleton landfills and MCAGCC Twentynine Palms facility will be affected
 - Mobile sources not included
- Calculate mobile and Scope 3 GHG emissions (e.g., employee travel) to present a consistent approach to NEPA calculations



Recommendations

- Wait for Council on Environmental Quality (CEQ) or Executive Order (EO) policy for GHG analysis with respect to NEPA documentation
- Continue tracking EAM rule development in California and provide input during public hearings
- Track development of cap-and-trade programs at state and federal levels
- Provide this study as a guide to other USMC installations outside of CA and AZ



Questions/Comments?

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