



**ENERGY** *SOLUTIONS*

Barnwell LLRW Disposal Site

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2013 Waste Management Symposia  
Phoenix, AZ

# Barnwell Site Update



- In-Region Disposal Operations
- Waste Volumes
- FY 2012/2013 Financial Arrangements
- Phase I Closure Performance Objectives
- Environmental Performance
- Decommissioning and Long Term Care

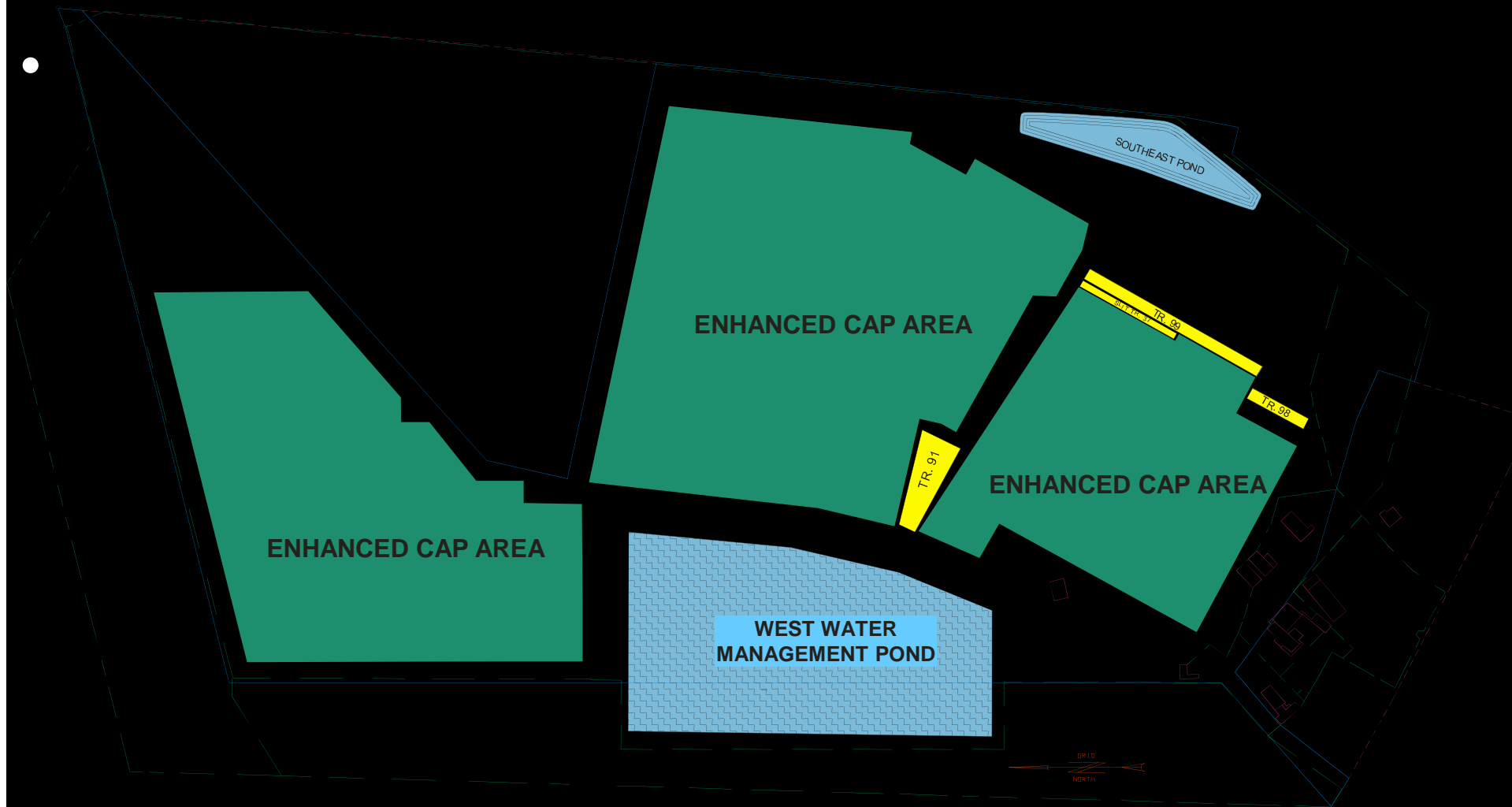
# Barnwell Complex



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# Disposal Site Configuration



Not to Scale

# Barnwell Disposal Facility



Blue indicates areas available for future waste disposal.  
Yellow indicates closed areas.

# Barnwell Disposal Facility



- 235 Acres Owned by the State of South Carolina
  - EnergySolutions leases the facility from South Carolina Budget and Control Board
  - EnergySolutions operates the disposal facility under SC DHEC Radioactive Material License 097
- Atlantic Compact member
  - Acceptance of Class A/B/C waste shipments 7 days per week
  - Acceptance of large components and irradiated hardware shipments
- Institutional Activities
  - Site maintenance
  - Environmental monitoring



# Compliance



- 43 Years of Uninterrupted Operations
- EnergySolutions Operation Assessments/Observations
  - Internal Assessments
  - External Assessments
  - Independent Assessments
  - Management Field Observations
- DHEC Licensing and Oversight
  - Extensive license conditions
  - Inspections
    - On-site inspector
      - Daily shipment inspections
    - Engineers
      - Weekly site inspections
    - Staff
      - Unannounced semi-annual license inspections
        - 2012 – 2 inspections – 0 NOV's

# Class A/B/C Waste Disposal





# Disposal of Class A/B/C Waste

- All waste arrives by truck
- Most shipments are HIC liners
- Vertical crane lift to place liner in prepositioned vault



# Barnwell Class A/B/C Disposal Trench



- All waste classes in same trench
  - Separate vaults for stable/unstable
- All waste in DHEC-approved vaults



# Irradiated Hardware & Large Component Shipments

- Pricing based on case-by case basis
- Generators are encouraged to coordinate shipments

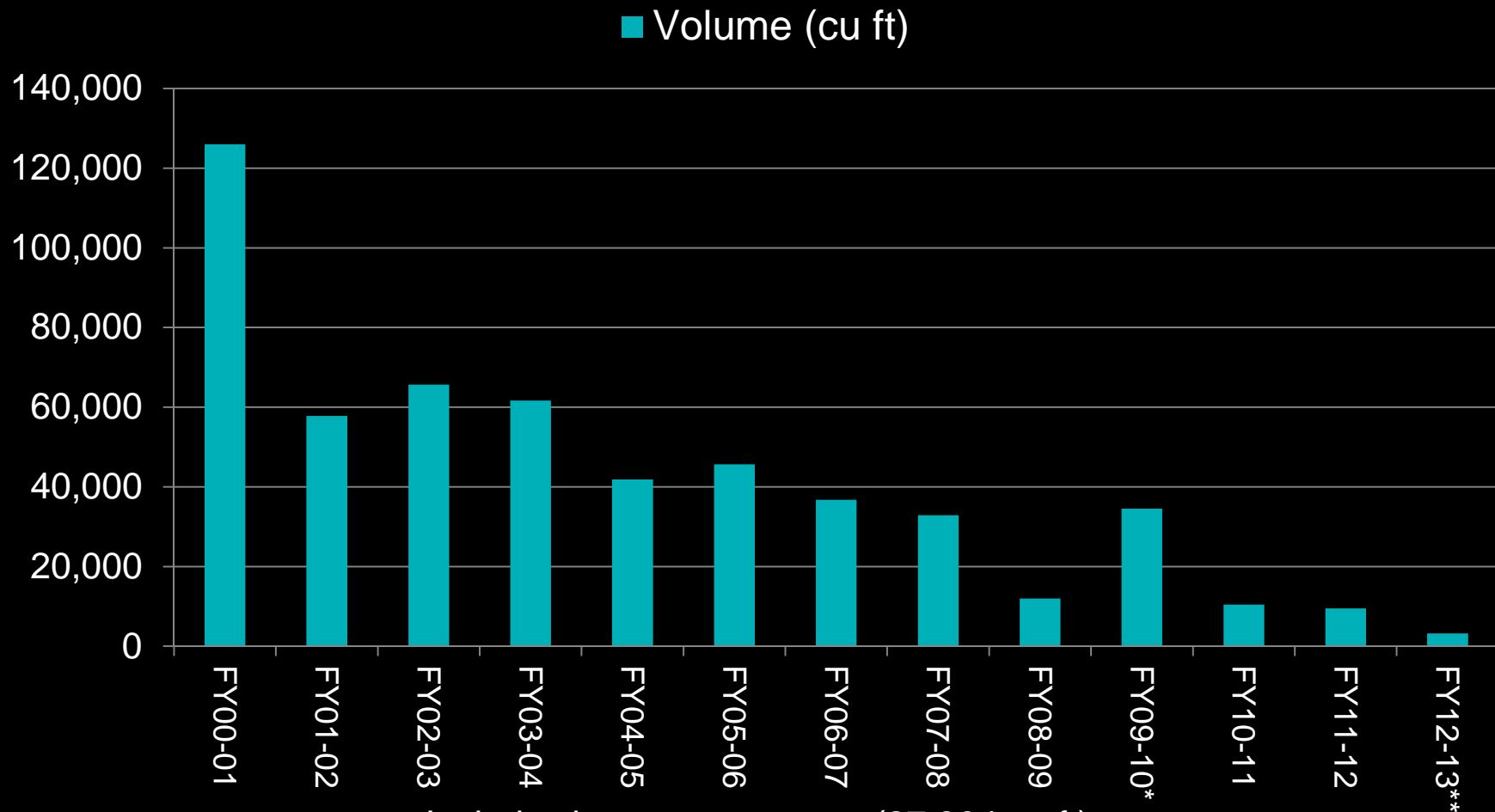


# Barnwell Workforce



- Number of Barnwell Disposal Site employees: 34
  - Total number of employees at Barnwell Complex: 74
  - Total *EnergySolutions* employees in South Carolina: 200
- Average length of employment at Disposal Site:
  - Over 20 years

# Recent Annual Waste Volumes Received (Fiscal Years)

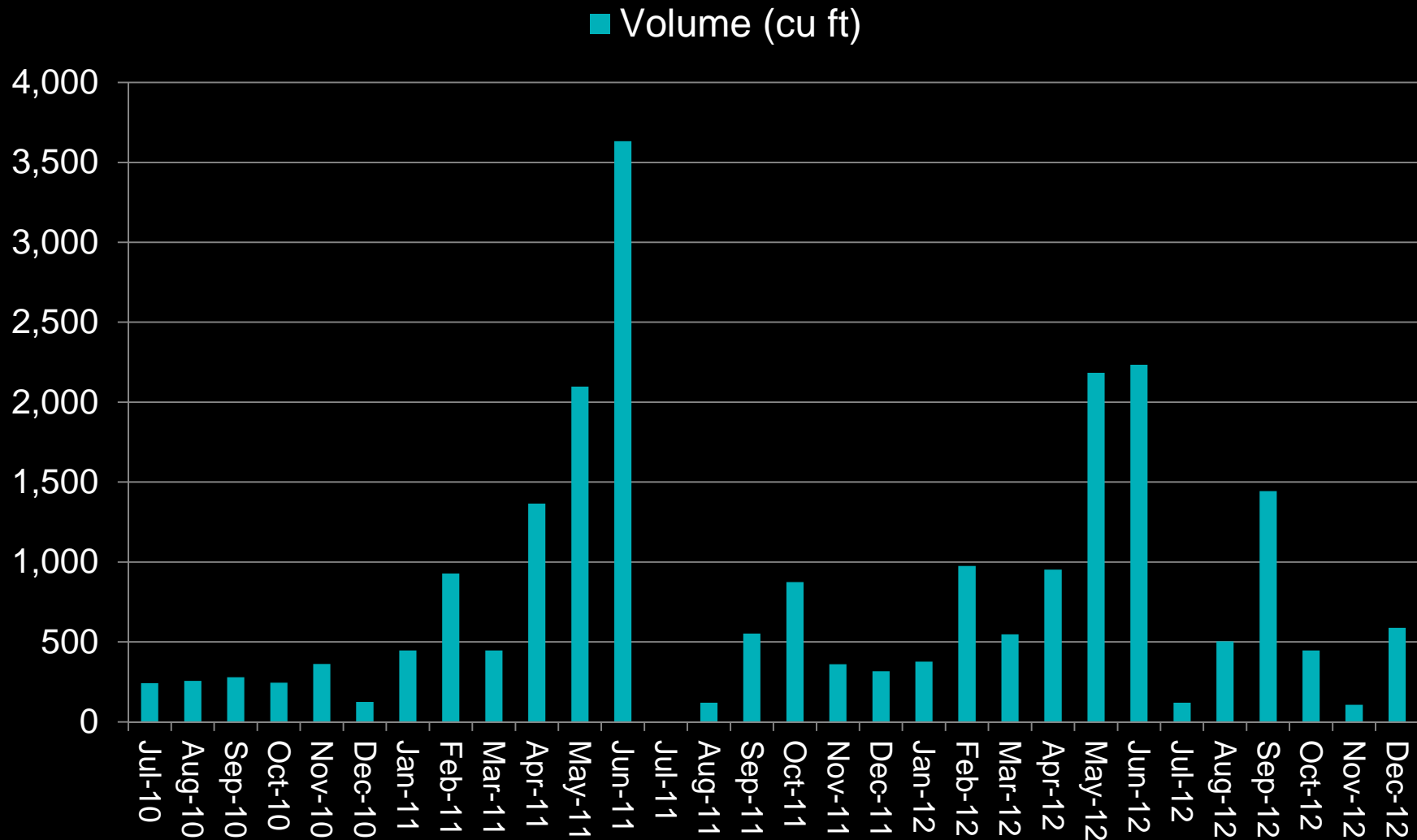


• Includes large components (27,304 cu ft)

• \*\* as of Dec 12

# 30-Month Volume Received Pattern

July 2010 – December 2012



# Atlantic Compact Disposal Rates



- Alternative Rate Schedule for FY 2012/2013 approved by SC B&CB on July 1, 2012
- Individual reactors may elect Option B Access Fee pricing
- Interim revenue requirement for Option B participants for 7,000 cubic feet: \$4,561,000 (\$350,846 per reactor)
  - Each Option B participant allocated an equal share of the volume and equal quarterly access fee
  - Differential to projected interim revenue requirement of \$5,309,444 made up from budget proviso funds
- Other generators use Maximum Uniform Rate Schedule

# Utility Agreements for FY 2011/2012



- All 5 Utilities with 13 Reactors chose Option B pricing
- Quarterly access fee: \$87,711.54 per reactor
- Annual volume allocation: 538.46 cubic feet per reactor
- Additional volume: \$133 per cubic foot (11,500 cubic feet maximum total volume)
- Utilities can share annual volume allocation with appropriate contract changes



# Maximum Uniform Rate Schedule



- Permanent ceiling on disposal rates applicable to Atlantic Compact waste
  - Adjusted each year in accordance with PPI
- Pricing based on several factors including:
  - Density and weight
  - Dose rate
  - Radioactivity
  - Biological waste
  - Other charges (Irradiated hardware, SNM, Atlantic Compact Commission)

# Closure Performance Objectives

- License 097, Condition 98, 16 performance objectives
- Phase I Closure Performance Objective Plan
- Ensure compliance with closure performance objectives
- Submitted Reports on 13 of 16 performance objectives
- License 097, Condition 99, requires closure plan and adequate financial assurance

# Performance Objectives Accepted

- Certify that all waste buried in accordance with license
- Disposition unneeded buildings and equipment
- Document arrangements for site transfer to custodian
- Direct gamma dose rate essentially background
- Render site suitable for surface activities
- Trench bottom elevations above water table

# Performance Objectives Accepted

- Eliminate the potential for loss of trench integrity
- Trench ID markers and corner markers in place
- Establish buffer zone of not less than 100 feet
- Provide passive security system (e.g., a fence)
- Investigate statistical increases in environmental samples
- Evaluate present and planned adjacent activities
- Compile and transfer records to SC DHEC

# Performance Objectives In Progress



- Stabilize site to minimize monitoring requirements
- Demonstrate less than 25 mRem/yr from releases
- Eliminate need for active water management

# Barnwell Environmental & Dosimetry Lab



- Environmental Monitoring
- Radiological Laboratory
- Radiation Dosimetry
- Engineering Support
- Site Characterization
- Hazardous Material Management



# Environmental Performance Evaluations

- Environmental Radiological Performance Verification, 2003
- Routine Environmental Monitoring Program, 1980 - Present
- Additional borings and wells, 2005 - 2009
  - Additional characterization between trenches and creek
  - Plume direction and size essentially the same
- Updated creek study in 2008
  - Water discharges into creek
  - Similar tritium and VOC concentrations
- Update site-specific performance assessment, 2010

# Long Term Financial Assurances



- Decommissioning Trust Fund
  - Balance on 12/31/12:
    - \$5.8 million
- Extended Care Maintenance Fund
  - Balance on 12/31/12:
    - \$143.67 million



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