ELECTRIC POWER RESEARCH INSTITUTE

EPRI LLW Program Overview

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WM2012

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Phoenix, AZ

OSSOG Focus of Changes

- 2011 Deliverables and 2012 Focus
- On Site Storage Inspection Frequency
- RadBench Numbers
- BC Reduction Guidance
- BC Reduction Technology
- BTP & Part 61 – Session 82

On Site Storage Operating Guidelines (OSSOG)

Utility Sponsor(s): Multiple

VALUE STATEMENT: ***Risk informed inspection frequencies for stored waste based on storage location, waste container and waste form will minimize the risk of material handling events and maintain dose ALARA***

Safe Storage of LLW On-Site that is Risk Based and ALARA

Draft for NRC Review (complete) **Final Report and Supplemental Manual**

Project Objective and Benefits

Revise the OSSOG to incorporate a risk informed approach to inspection frequencies that balances the potential for a storage event, the potential for a material handling event and the occupational dose from storage inspections. The benefit of this project is overall less risk associated with stored LLW and less radiation dose.

Current Year Task Summary

•Report 1024733 completed , published and ready for NRC review (NOT APPROVED FOR PLANT USE)

•Draft companion OSSOG supplemental information complete and awaiting publication of NRC endorsed OSSOG

•Report 1023016 pertaining to waste forms for interim storage published in September 2011 and used to inform the OSSOG revision.

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OSSOG Focus of Changes

- **Inspections:**
  - Risk-based frequency and method
  - Technically justifiable, proven, and safe container inspection program
- **Outside storage:**
  - Define more concise guidance
  - Address recent severe environmental, geological, and meteorological events
- **Integration of industry operating experience:**
  - Inspection and monitoring results
  - Waste form
  - Handling

OSSOG Risk Evaluation

- Risk based approach considers:
  - Industrial, environmental and radiological safety as it relates to occupational workers, plant equipment, and the public
  - Waste characteristics, waste forms, containers and storage facilities
  - Storage container design criteria
  - Regulatory and other agency inspection guidance
  - Industry OE
- **Multi-step process evaluates; Container Risk, Facility Design and Waste Form**

OSSOG Proposed Inspection Criteria

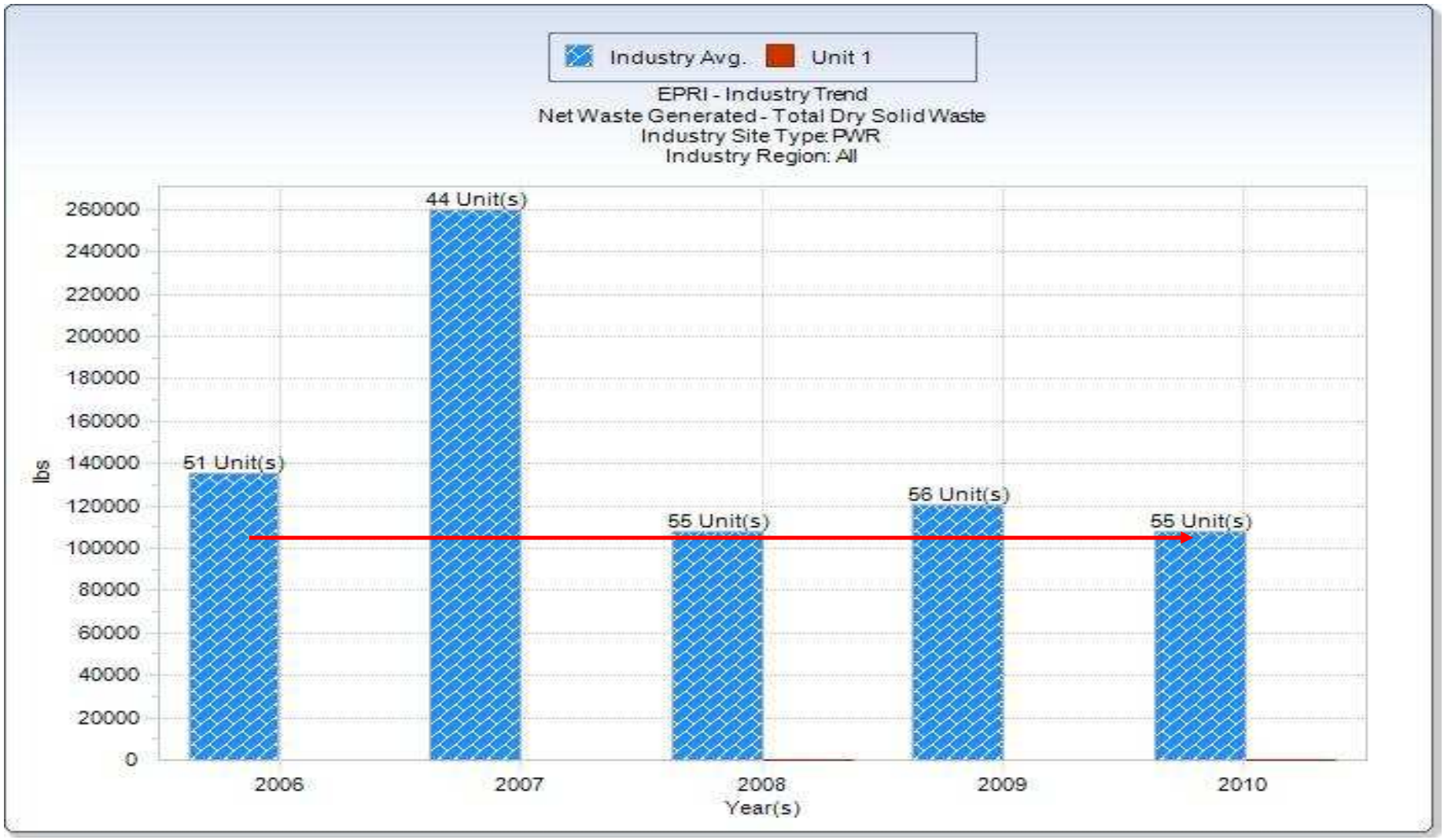
Waste Description	Initial Inspection	Subsequent Inspections
Solidified, Encapsulated or Thermally Treated	One container in first year	**One container every ten years**
Raw **dewatered wet waste in HICs**, Facility designed to contain 100% of volume	One container in first year	**One container every five years**
Raw **dewatered** wet flowable waste **in other than HICs** (e.g., steel liner)	10% or one container per year whichever is greater	
DAW and Wet Filter Waste in other than HICs with containment	10% or one container every two years whichever is greater	
DAW and Wet Filter Waste in other than HICs without containment (outside)	5% of stored inventory per quarter	

- In support of Regulatory process TR update in 2012 to support record of review process

Waste Generation Trends

- Source: EPRI RadBench™

Total DSW Generated – PWR – 2010 Industry Trend



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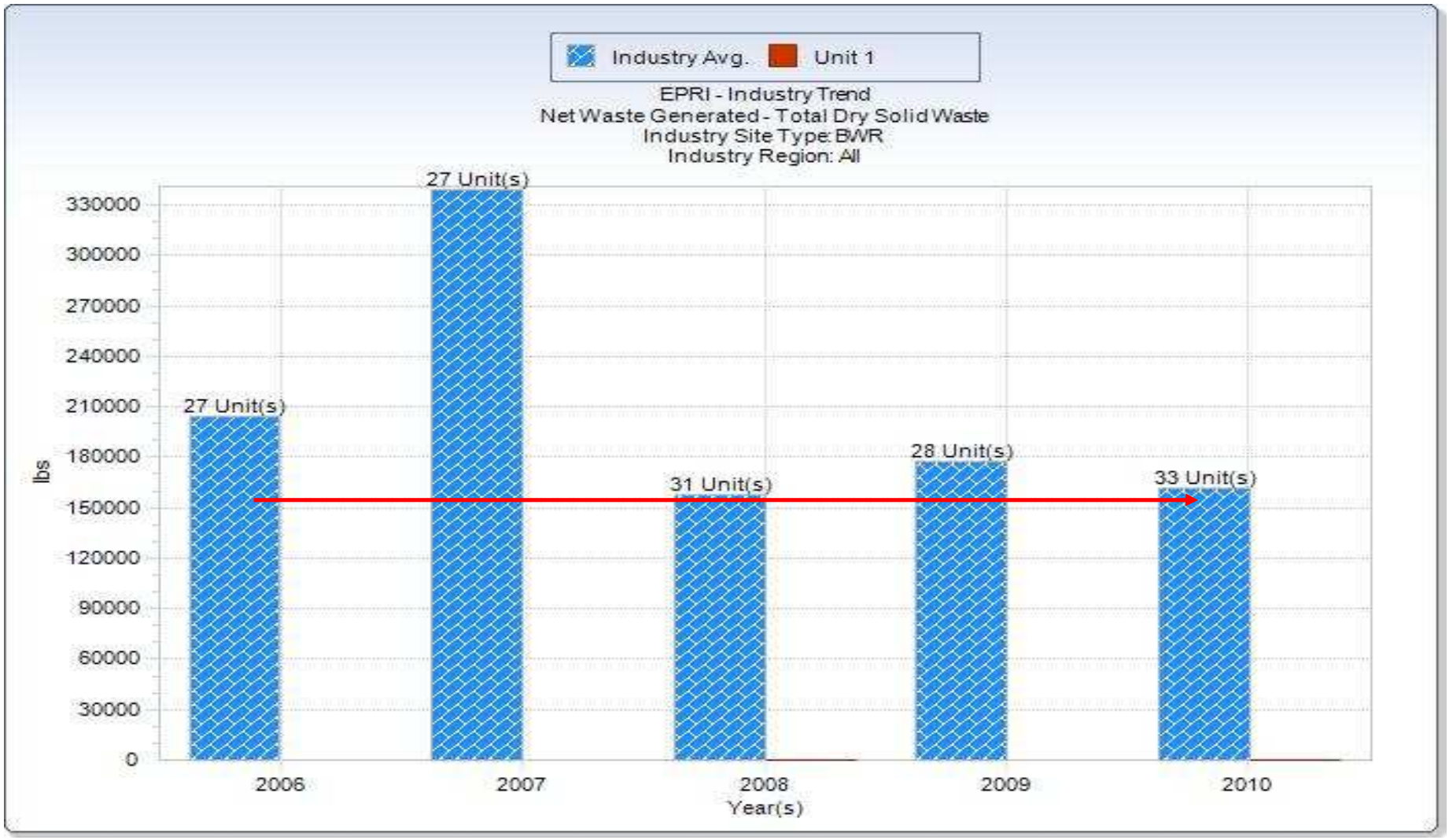

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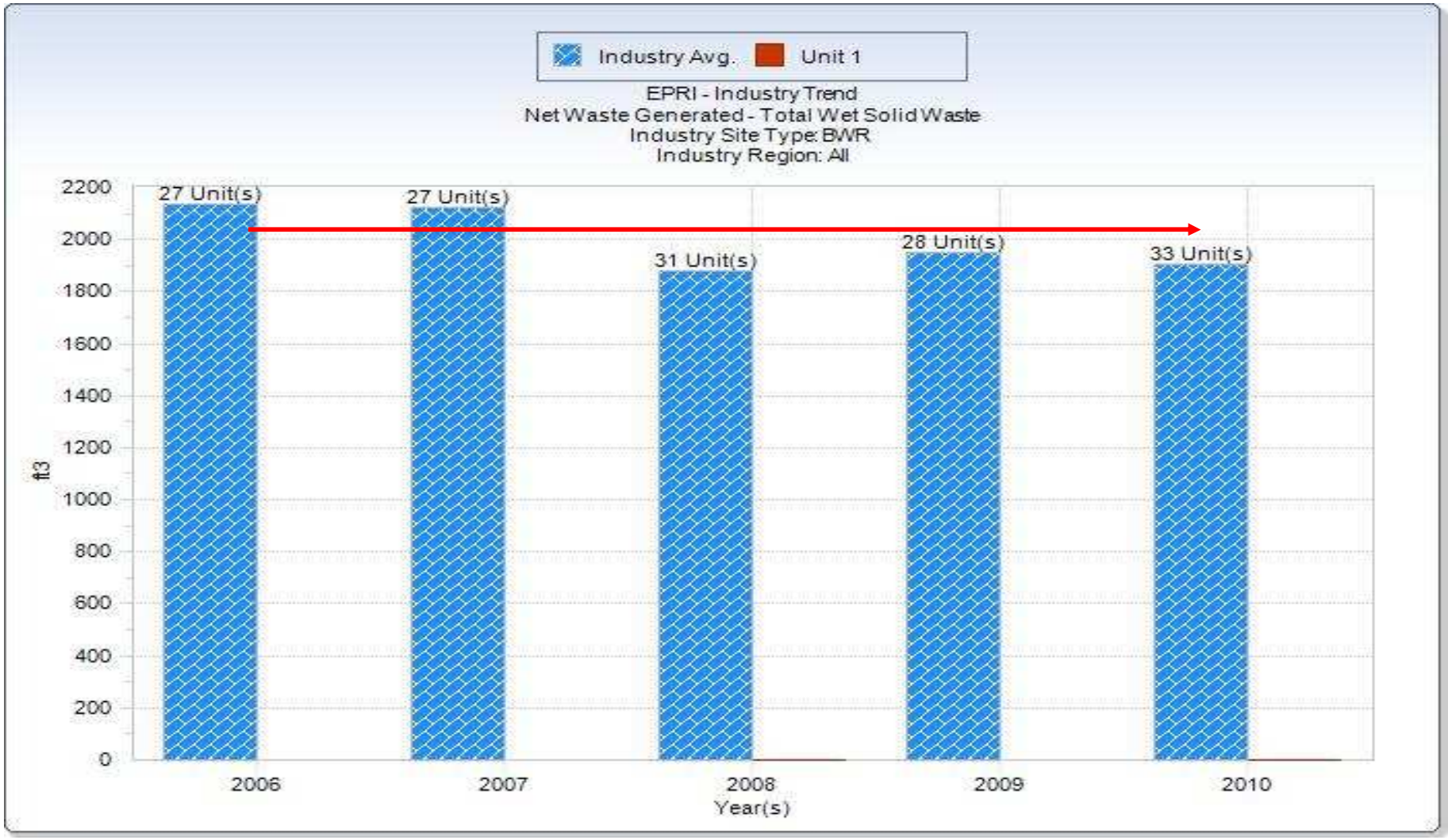

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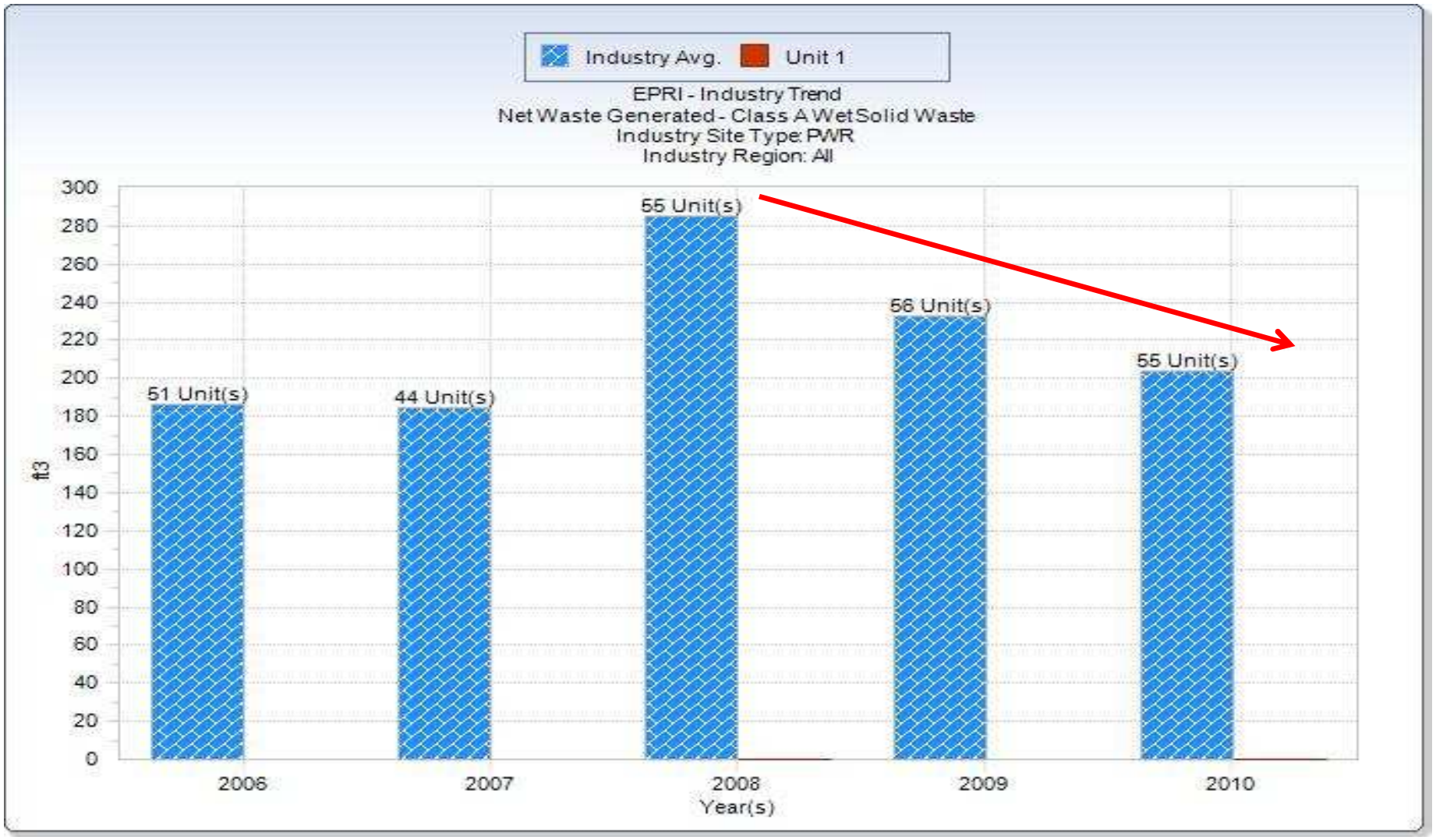

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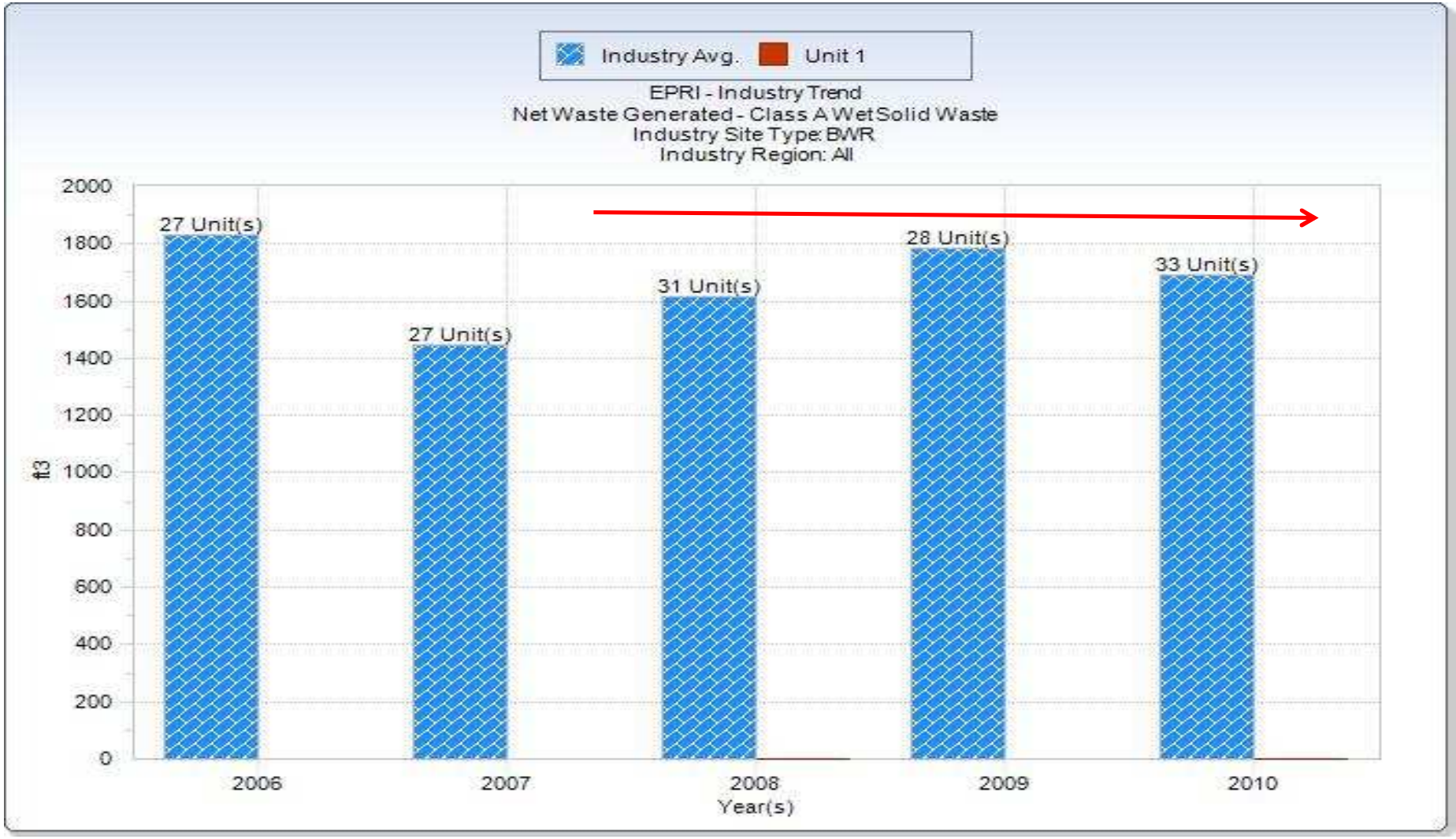
Total Class A WSW Generated – BWR 2010 Industry Trend



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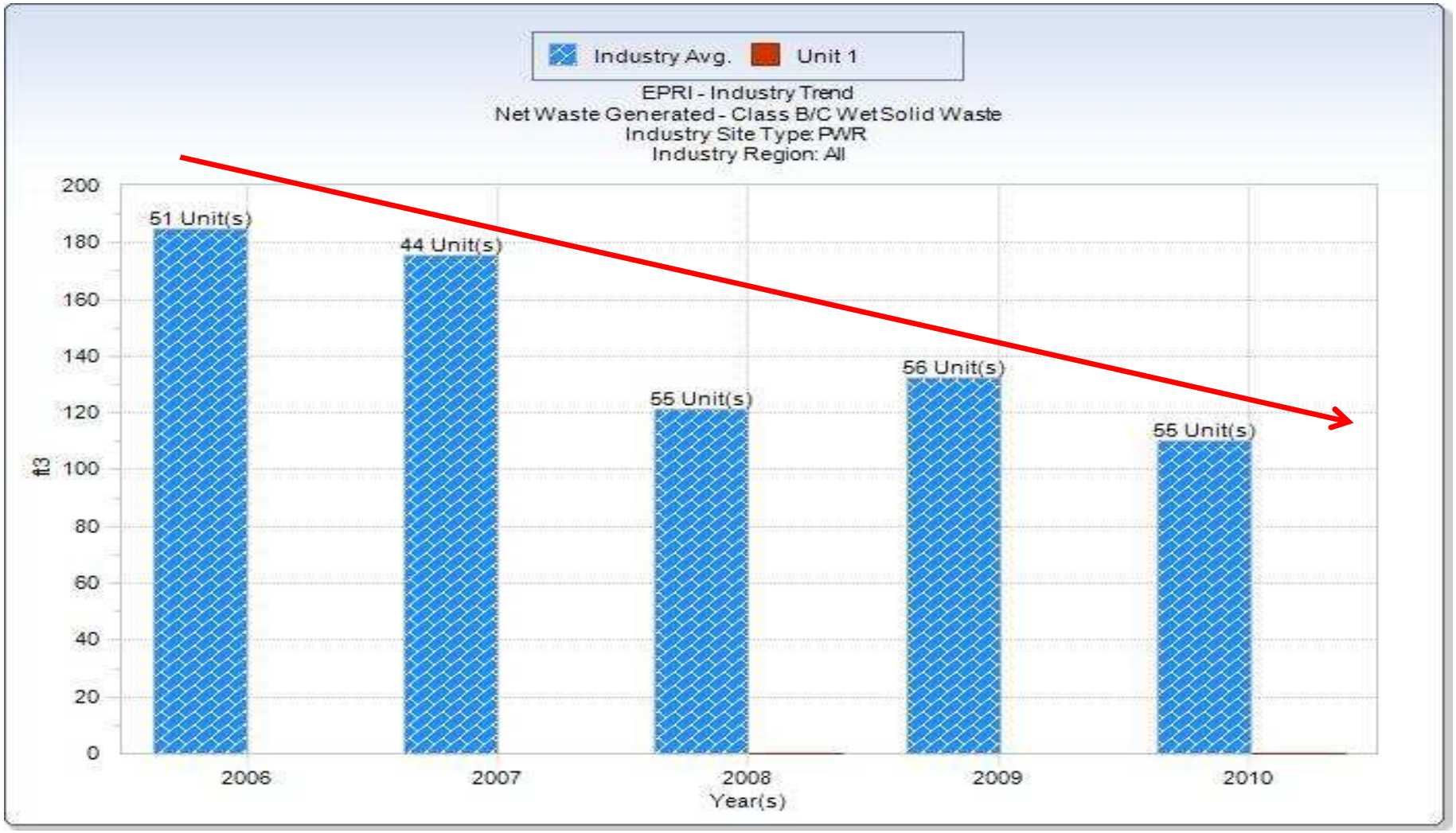

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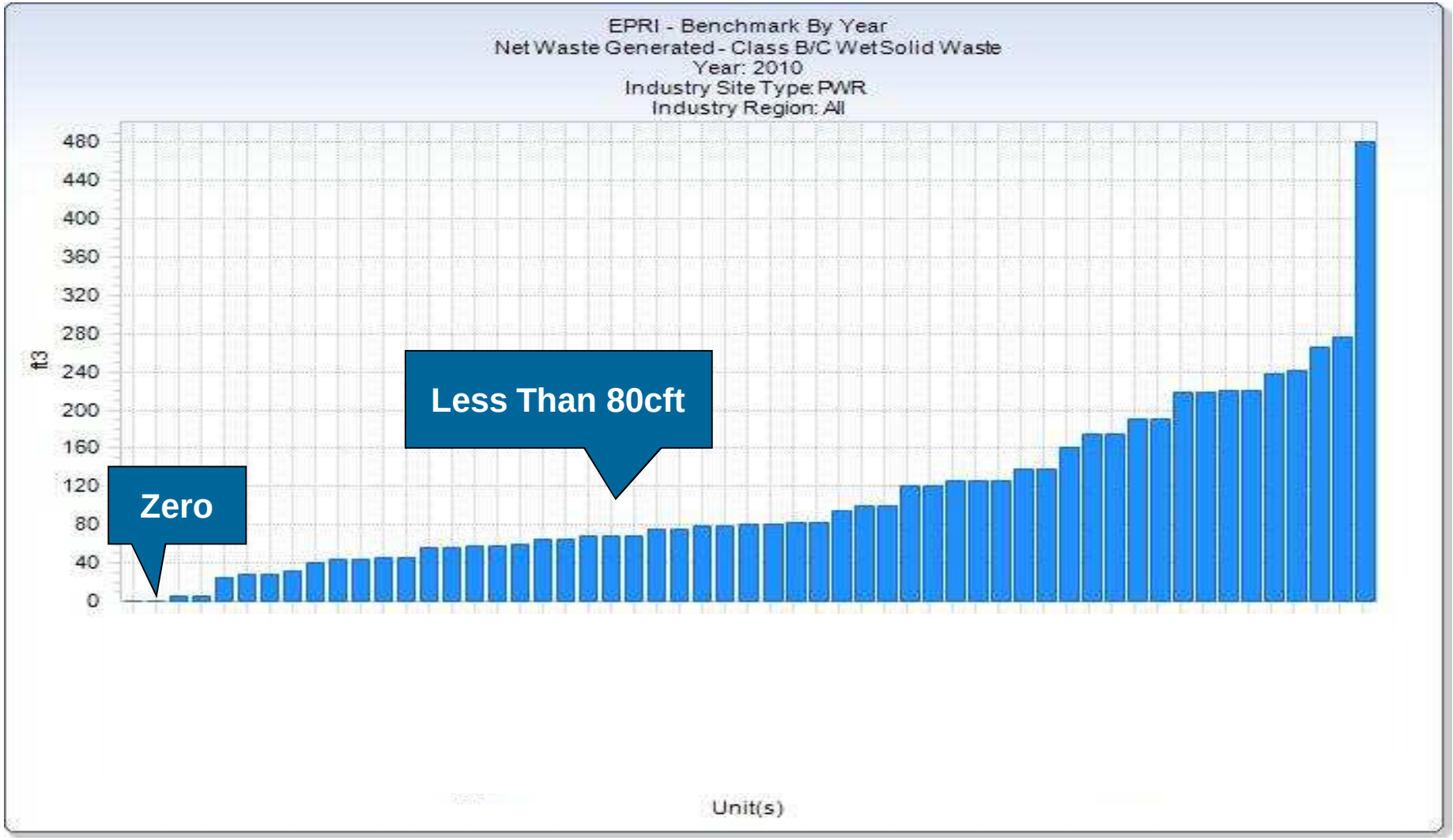

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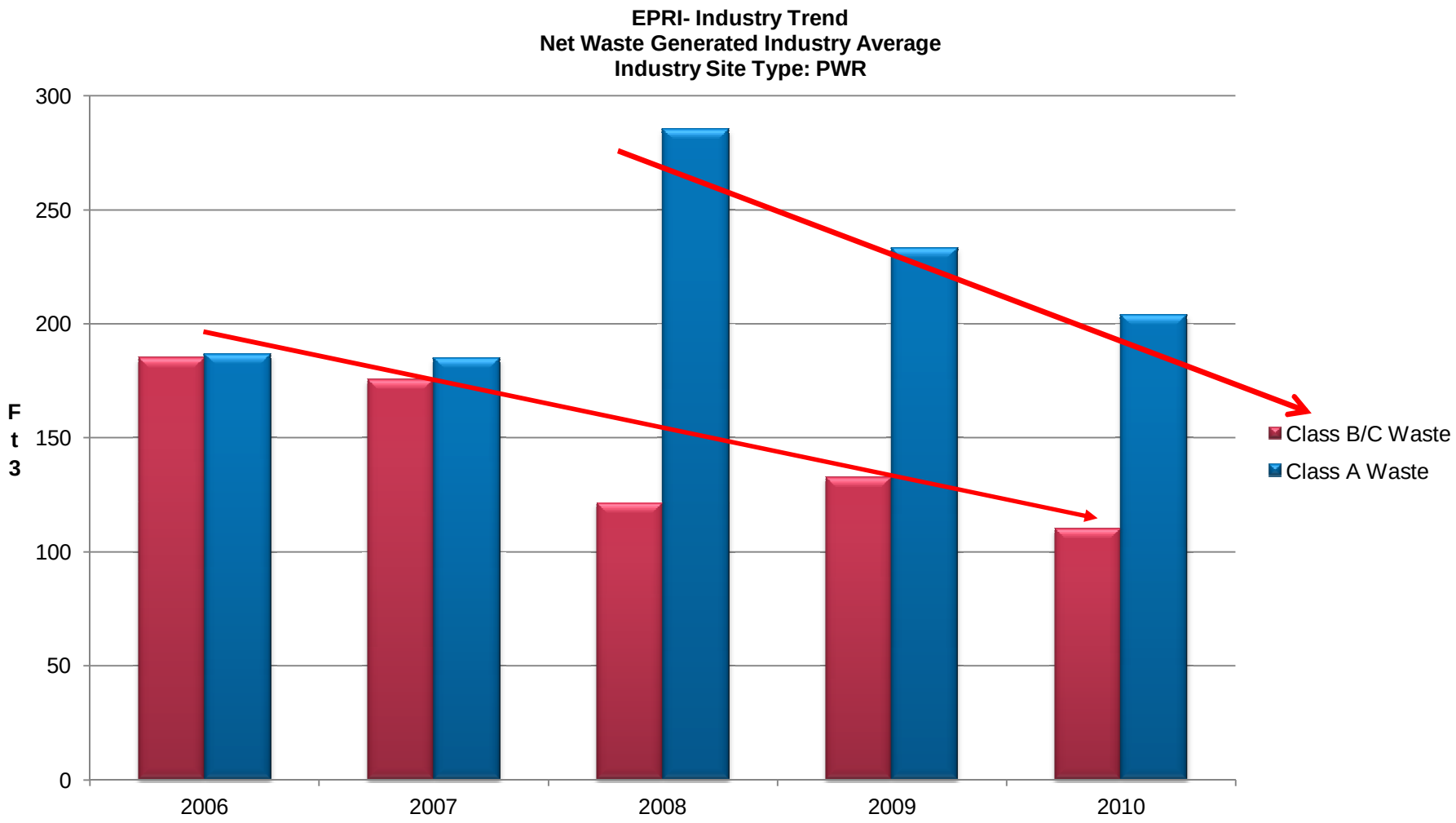

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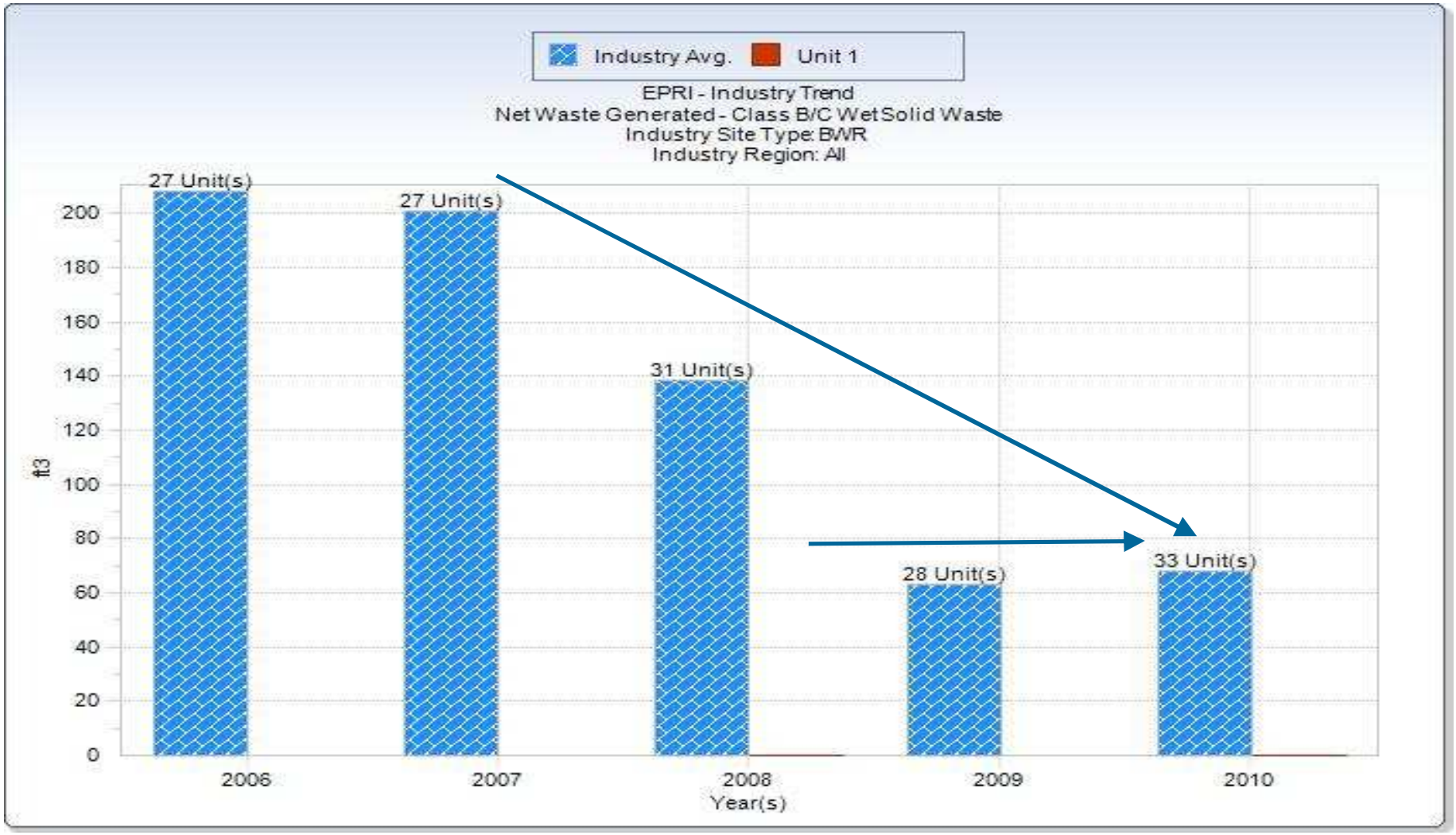

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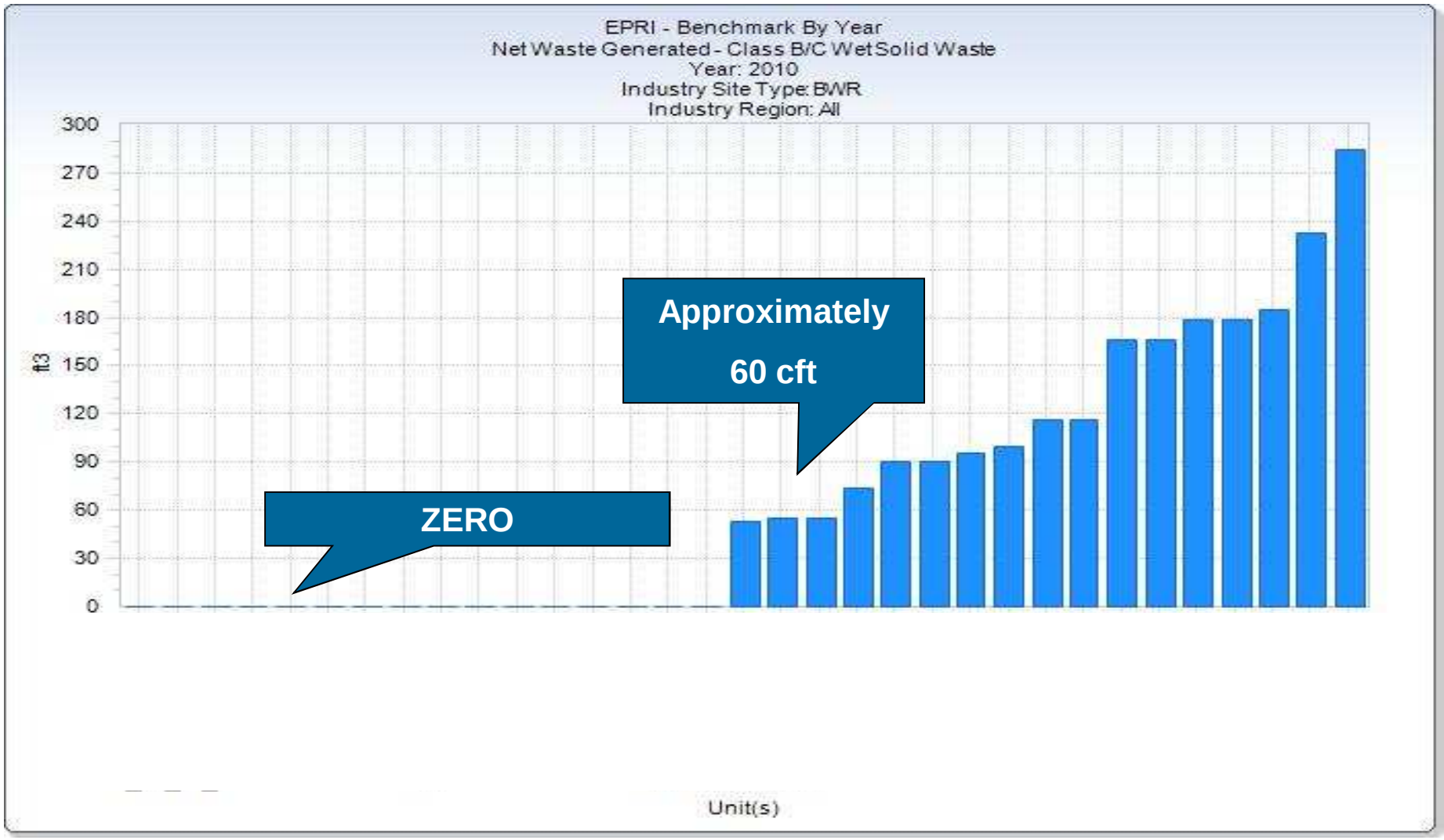

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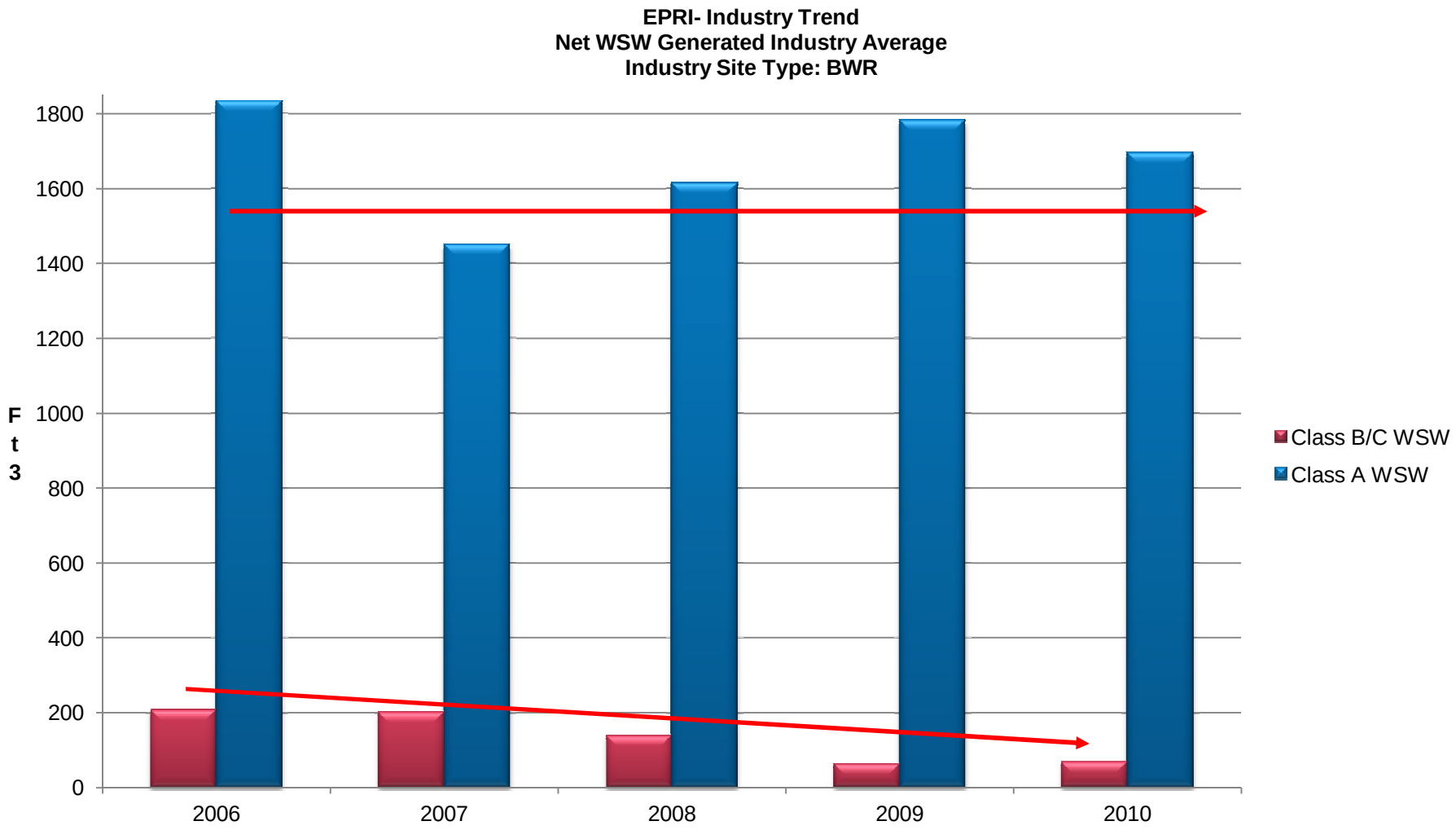
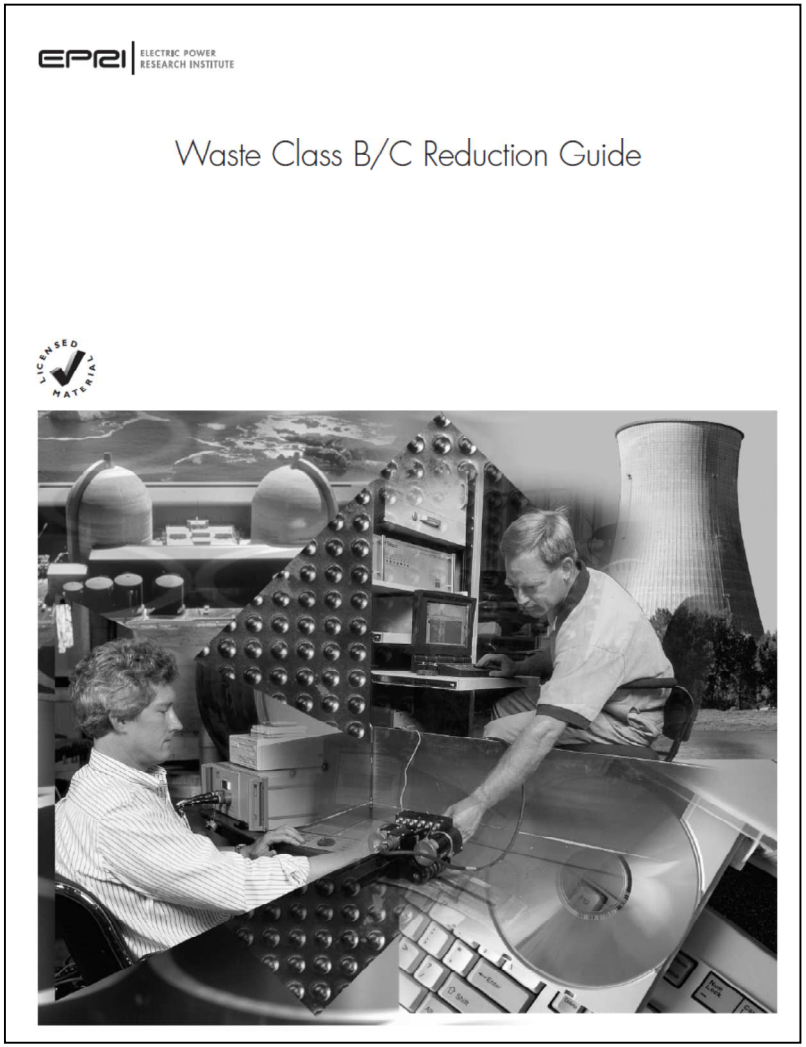


Waste Class B/C Reduction Guide

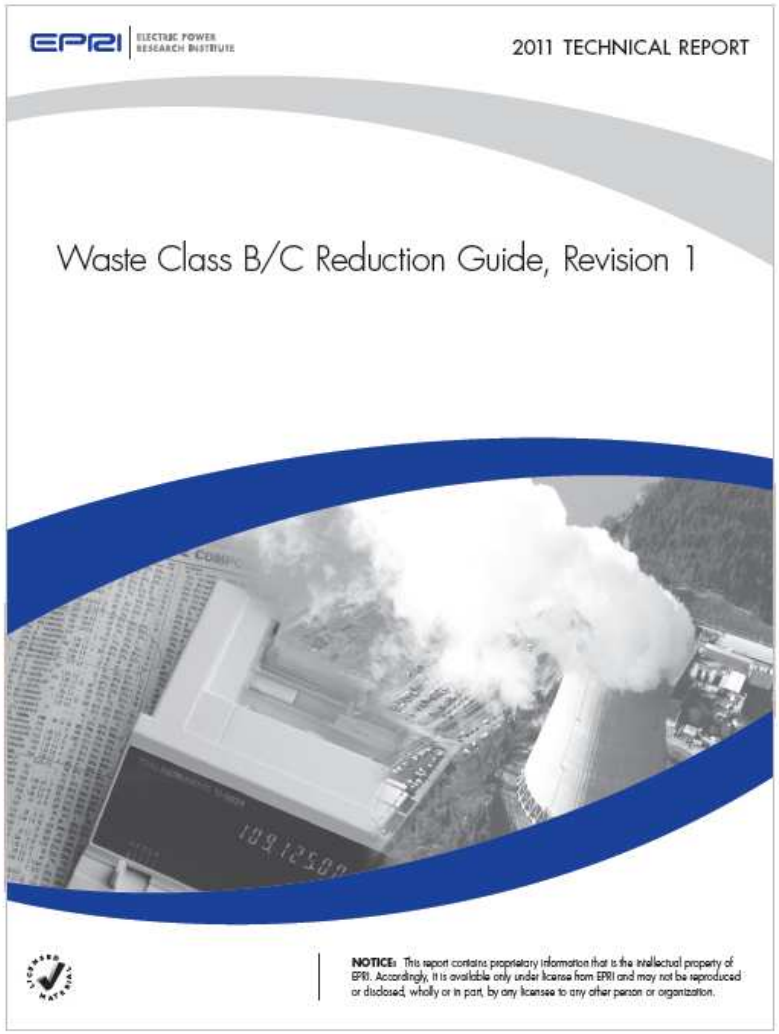
- EPRI Report 1015115
- Issued 2007
- Techniques:
  - Primary Ion Exchanger (CVCS)—On Line Lithiation
  - Reactor Water Cleanup (RWCU) in Service Run Length
  - In Service Media Management—Spent Fuel Pool
  - Media Separation and Vessel Short Loading
  - Media Segregation in Spent Resin Tanks or Filter Vaults and Waste Containers
  - Spent Resin 10CFR61 Classification Options



2011 Revision: Goals for the Revision

- Provide the Chemistry Manager the information he/she needs to implement methods for further B/C waste reduction
  - Added several examples of successful technique implementation
- Assure operating chemistry impact, if any, is identified
  - Incorporated industry data from plants using the techniques
- Assess and provide new methods for B/C waste reduction
  - Post Generation Segregation of Cartridge Filters
  - Cartridge Filter Dose Rate and Activity Management
  - Cartridge Filter Reduction using Alternate Ion Exchange Media

EPRI Product # 1023017



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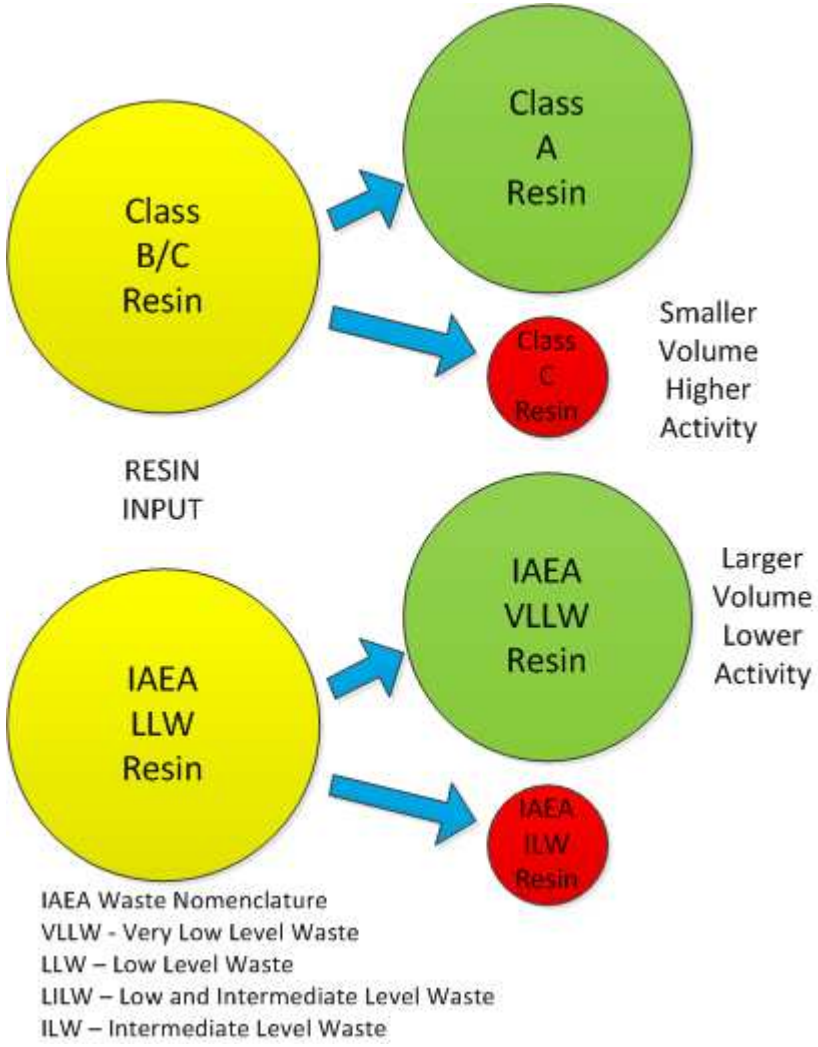
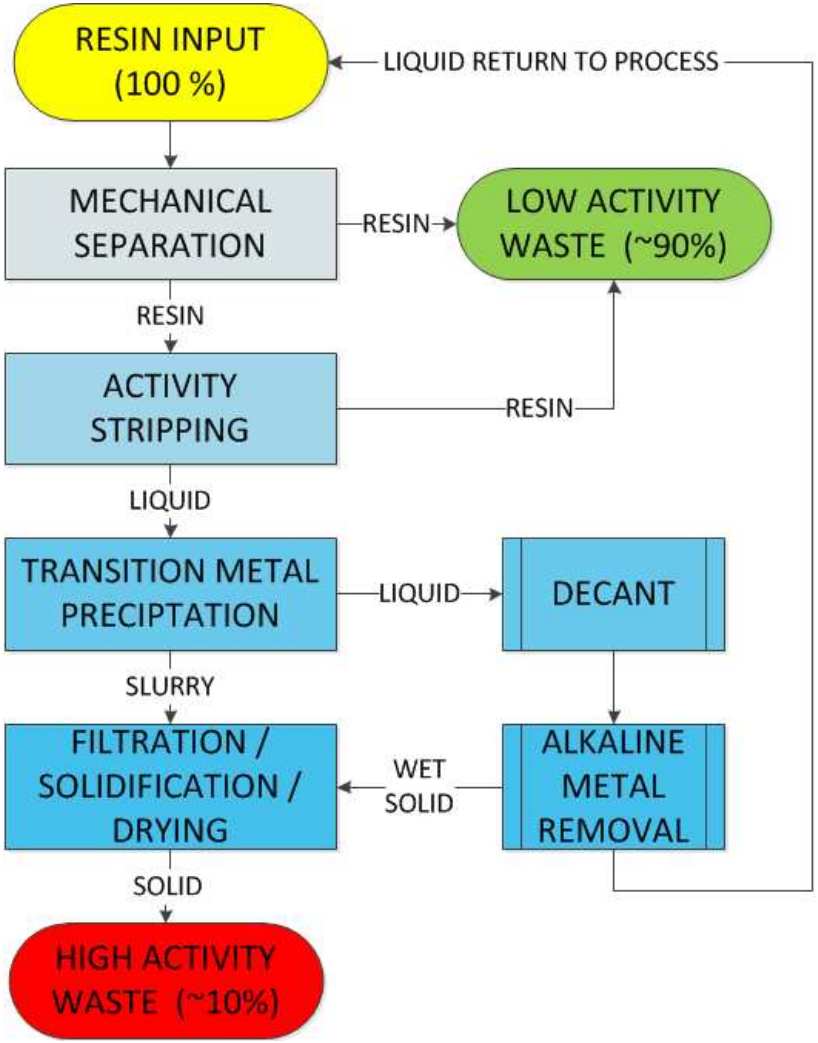
B/C (LILW) Reduction Technology

- Offsite process to shift the radioactive burden in spent resin to another waste form of a smaller volume
- Processed resin available for more economic disposal
- Applicable to both US and international markets
- Latter stage of development
- Especially beneficial plants unable to implement other on-site reduction methods



Process Flow Diagram

- Initial separation provides approximate 50% volume reduction
- Activity stripping removes the majority of the radioactive burden
- Transition metal precipitation results in very small solid waste volume
- Alkaline metals removed with selective media
- Resultant waste ~10% of original volume



2012 Projects – LLW

Disposal Regulations

- Continued BTP Engagement (filters and well initiative)
- Develop formal comments to BTP when published
- Continued Part 61 research to risk inform regulation
- Publish BTP/Part 61Technical Report

Waste Volume Optimization

- Complete B/C waste reduction technology testing (2012)
- Publish B/C waste reduction Technical Report
- Develop B/C waste reduction technology for commercial application (2012 - 2013)

On-Site Waste Storage

- Incorporate NRC Comments (2012)
- Publish Final Guidelines (2012)
- Publish Final Supplemental Information Manual (2012)

2012 Meetings – LLW

ASME Radwaste Workshop	• June 18 – 19, 2012 • Loews Ventana Canyon, Tucson, AZ
EPRI 21st International Low Level Waste Conference	• June 19 – 21, 2012 • Loews Ventana Canyon, Tucson, AZ
USNRC Part 61 and BTP Workshop	• June 22, 2012 • Loews Ventana Canyon, Tucson, AZ
LLW Technical Strategy Group	• Eight Meetings per Year Approximately Monthly • Webcasts

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