



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Expanded Mission Analysis for Idaho Advanced Mixed Waste Treatment Project

Office of Environmental Management

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Bottom Line

- AMWTP tremendously successful in nearing completion of intended mission to process 65,000 cubic meters of on-site legacy waste, in accordance with the contract as originally proposed.
- DOE determined that expanded AMWTP Mission to process off-site waste is not cost effective:
 - Huge cost deficit (-\$75M) in first 2 years
 - Uncertain cost recovery dependent on alternative packaging and transportation approaches
 - AMWTP is large facility designed for high throughput – it would be very challenging to sustain an economical feed rate, even under reduced operations, due to waste availability and transportation limitations
 - Significant program risks and uncertainties: Packaging and transportation, funding, schedule, state agreements all factors to achieve/sustain economical processing rate and avoid standby costs of \$3.5M per month
- Other reasonable transuranic (TRU) waste treatment paths can be implemented for DOE generator sites– no waste will be left without a path forward

Explanation of Cost Analysis

Phase 1 (2019-2021): **-\$75M**

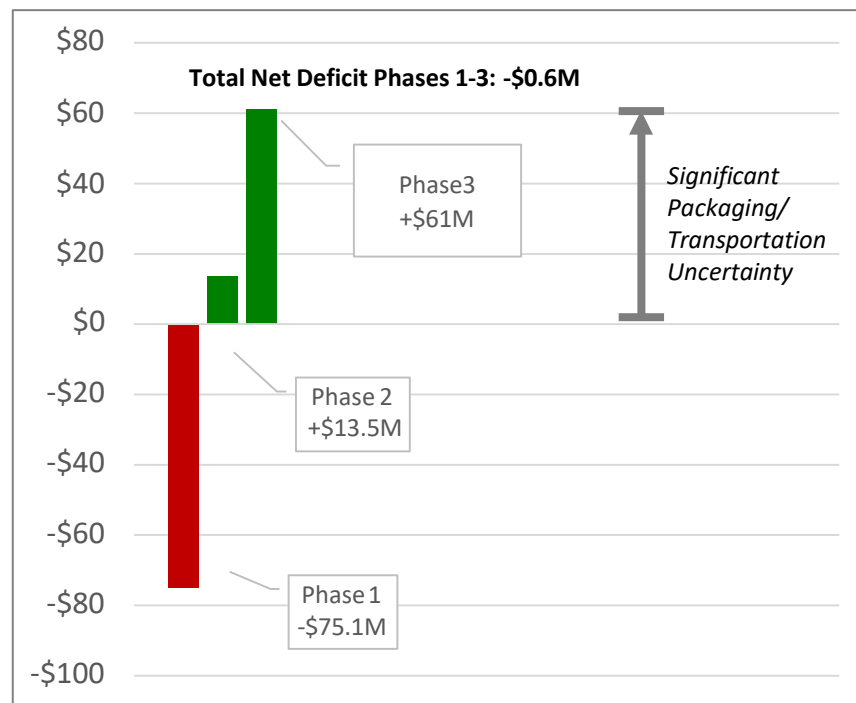
- Ship “WIPP certifiable waste” to AMWTP for super-compaction and certification (41% of total inventory)
- Meets current packaging/transportation protocol
- More cost-effective to certify on-site/direct ship to WIPP
- Alternative is to place AMWTP in costly warm standby

Phase 2 (2021-2022): **+\$13.5M (Net -\$61M)**

- Ship “Non-WIPP certifiable” drums/small boxes to AMWTP for treatment, super-compaction and certification (20% of total inventory)
- Does not meet current packaging/transportation protocol
- Requires safety analysis and revisions to Type B packaging certificates-of-compliance outside NRC approval

Phase 3 (2022-2024): **+60M (Net -\$0.6M)**

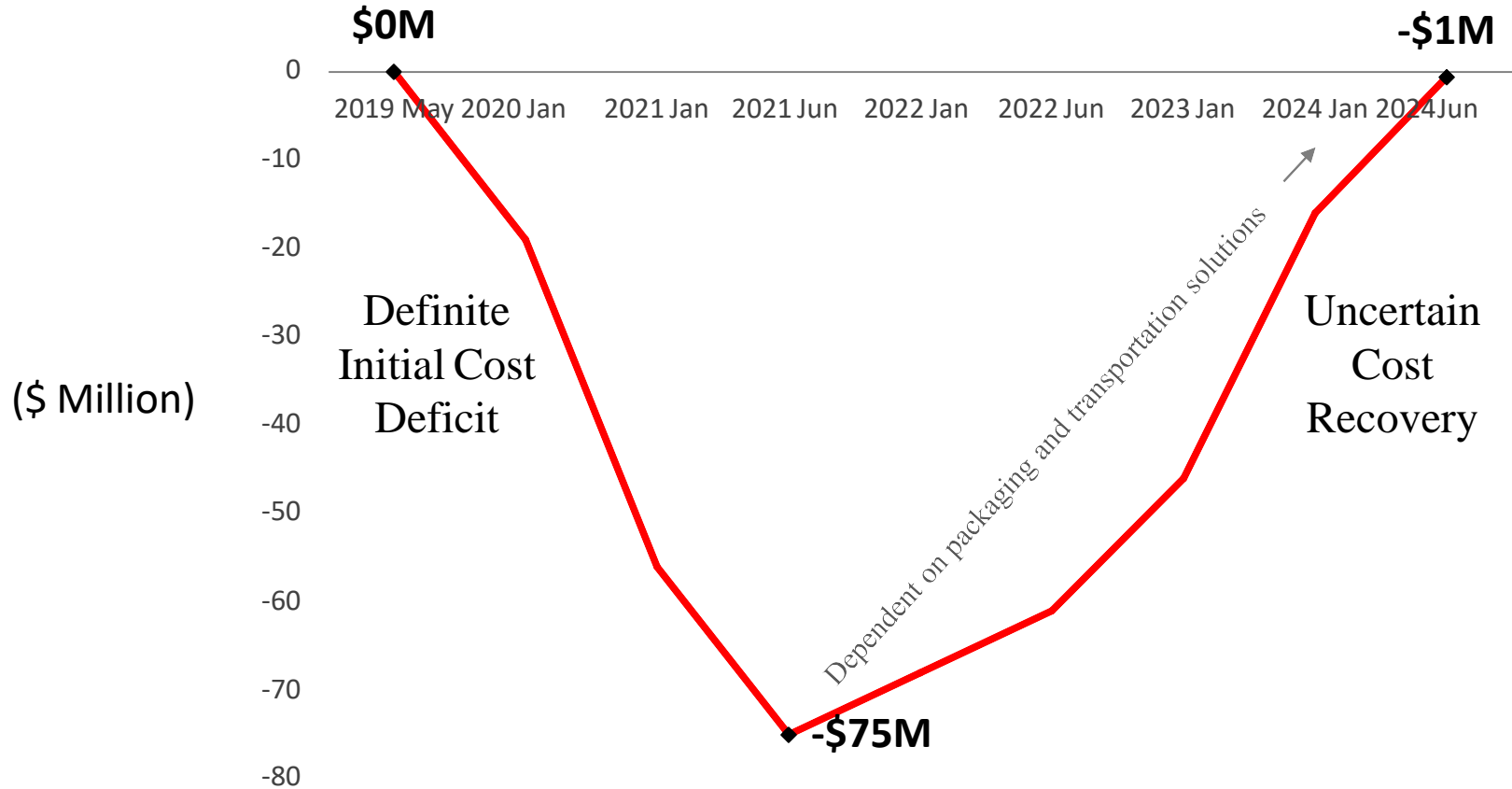
- Ship Non-WIPP certifiable large oversized boxes to AMWTP for treatment, super-compaction and certification (39% of total inventory)
- Boxes too big to fit into existing Type B package – requires detailed safety analysis and new packaging development (including potential drop tests)
- Greatest cost payback but also greatest packaging and transportation challenge



Uncertain ability to recover definite Phase 1 cost deficit due to Phases 2/3 packaging and transportation challenges and capability to achieve/sustain economical flow rate

Results: Return on Investment (ROI)

Significant Cost Deficit (-\$75M) Unlikely To Be Recovered



Challenges

80% of Cost Recovery (\$61M) Would Depend on Challenging Alternatives to Ship Large Oversized Boxes at Hanford – High Uncertainty of Success

1. Packaging and Transportation

- WIPP Land Withdrawal Act requires shipments to WIPP to be in a Nuclear Regulatory Commission-approved Type B Package. Established protocols with Western Governors Association also apply this requirement to inter-site TRU shipments in their states
- 574 out of 822 shipments in AMWTP Business Case cannot be shipped in NRC-approved Type B package due to presence of prohibited items or the containers are too big to fit inside a Type B package
- Alternative packaging required to ship this waste to AMWTP (2 to 5 yrs. to develop)
- Significant uncertainty whether alternatives could be fully successful (i.e., technically feasible and accepted by stakeholders) to recover initial -\$75M cost deficit
- Oregon Department of Energy formally stated it would “strongly oppose” using non-NRC approved packaging



Large box containing TRU waste

NRC Approved Type B
Packages



TRUPACT-III



HalfPACT (left) and
TRUPACT-IIs (middle
and right)

Challenges (Continued)

2. **Ability to Sustain Economical Processing Rate:** Failure to sustain economical processing rate would increase unit treatment costs at AMWTP and/or incur \$3.5M per month in standby costs.
 - Treatment facility designed to process at a high rate for large volumes of waste
 - Processing rate for expanded mission would be reduced by ~60 percent (from ~3,000 m³ to 1,225 m³ per year) with corresponding re-alignment in workforce
 - Schedule to restart shipping activities at Hanford and develop packaging and transportation approaches requires acceleration to avoid standby costs at AMWTP – high unlikelihood of success

3. **Funding:** Would require re-prioritization of site baselines and funding profiles (rough order magnitude estimates)
 - \$30M for packaging development and procurement
 - \$20M to restart shipping and pay loading capability at Hanford
 - \$390M for processing business case inventory at AMWTP, including shipments to facility (excludes WIPP shipment and disposal costs)

4. **State Agreements:** Compliance with time limitations, TRU waste deadlines, transportation agreements

Conclusions

- Extending the AMWTP mission would not be cost-effective in the near-term nor likely cost-effective in the long term due to packaging and transportation challenges in maintaining an efficient processing rate.
- DOE considered multiple possibilities for a successful Business Case to expand AMWTP's mission (e.g., refining cost estimates, opportunities to reduce initial cost deficit, evaluation of standby scenarios, etc.).
 - Possible incremental improvements/adjustments to Business Case do not affect bottom line: Business Case severely challenged by irreducible programmatic risks/uncertainties in packaging and transportation development, ability to sustain economical feed rate, funding approaches, and state agreements.
 - DOE-commissioned Independent Review supported conclusions.
- Standby scenarios not cost effective.
- Other reasonable waste treatment paths can be implemented for TRU waste at remaining DOE generator sites.