

“What If” Scenarios

To assist the Committee in developing work products that continue to be relevant in the event of changes to the OCRWM program, at its meeting in January the Committee directed staff to develop short descriptions of the following seven “what if” scenarios. These scenarios will be examined to see how each of them impacts the strategic plan

1. First shipments by truck from Western sites.
2. Development of rail access to Yucca Mountain is delayed beyond 2010.
3. Sabotage concerns become overwhelming and there is a militarization of shipments.
4. Emergency federal storage.
5. PFS opens and becomes an integral part of the NWPA system.
6. Alternative mode and routing decisions are made that do not focus on reducing the number of shipments or minimizing the time and distance of shipments.
7. A maximum southern routing strategy is adopted.

The Committee agreed that, at present, it will focus on three of the scenarios: 2) Yucca Mountain rail access is delayed; 5) PFS opens; and 6) maximum southern routing.

Scenario #1 First shipments by truck from Western sites by 2010

Summary

Shipping first from Western states would allow the incremental development of the transportation program with initial shipments from locations that only require crossing a few states. This provides the advantage of being able to test transportation protocols in a limited number of states. This scenario would require utilities to agree to trade their existing pick-up rights to allow all the early shipments to be made from Western sites via truck. First shipments would likely come from reactors without rail access that can ship by truck. The next shipments would come from reactors with rail.

Assumptions:

Government waste (e.g., material at INEEL) is lower in the pecking order

No HLW or greater than class C waste

Start with shipments that cross fewest numbers of states:

1st shipments: CA-NV

2nd shipments: AZ-CA-NV

3rd shipments: CO-WY-UT-NV and NE-WY-UT-NV

4th shipments: WA-OR-ID-UT-NV and TX-NM-AZ-CA-NV and KN-CO-WY-UT-NV

For state planning and preparations: States that would have to be prepared first would be NV, CA, AZ and then OR, WA, UT, NM, CO, WY. First Section 180c funds go to NV, CA, AZ needed by 2006.

For transportation logistics: Could acquire only truck casks initially; should locate cask maintenance facility in NV; what are the number of casks required?

For shipping sites – must override delivery commitment schedule to get eastern reactors to agree not to ship. Eastern and Midwest utilities would have to be lowered in priority.

Need to compare how much waste could be accepted from western shipments in first years.

Current OCRWM Program Plans:

DOE has a strategic plan which provides a general outline of their shipping expectations. The Yucca Mountain EIS provides just bounding scenarios – including representative routes. DOE has a delivery commitment schedule which must be updated.

If you don't have rail, you will ship by truck. Look at delivery commitment schedule to get location of reactors with pick-up rights and no rail access. (Modify for reactors that have fuel in dry storage shippable only by train – Trojan, Rancho Seco). Look at other shutdown reactors to see if they have dry storage shippable only by train.

Scenario #2. Development of rail access to Yucca Mountain is delayed beyond 2010

Summary

If the rail spur to Yucca mountain is not completed by 2010, initial shipments of SNF will have to be shipped initially by truck. There would be a slow initial ramp-up in shipments beginning in 2010 rising to 1500-2000 truck shipments per year by 2015. Two options might be (1) to ship legal weight trucks on rail cars to Caliente, Nevada and truck the casks to Yucca Mountain, or (2) use rail to Caliente and then heavy haul trucks to move casks to Yucca Mountain. DOE will need to procure enough casks and trailers to allow shipping to proceed on pace. DOE and State Regional Groups will have to finalize the highway routes.

- Can shipments still arrive in Nevada by rail and then be transferred to truck for the remaining miles to the repository site?
- Will DOE be forced to procure truck casks which will be used initially, but discarded later when the rail comes on line?

Current OCRWM Program Plans

- Caliente-Yucca Mountain rail spur operating in 2010
- What is DOE's schedule for doing the rail line EIS and construction?
- Will DOE produce the needed number of casks?

Scenario #3. Sabotage concerns become overwhelming and there is a militarization of shipments

Summary

In the aftermath of the September 11th terrorist attacks, the federal government has substantially increased the assessment and protection of potential terrorist targets. Of particular concern is the ability of terrorists to gain access to nuclear materials which could be used in a "dirty bomb". Spent nuclear fuel and high level wastes being transported on the nation's highways pose a potential target for terrorists – either stealing the material or attacking the shipment with explosives sufficient to breach the cask and cause a radioactive release.

Safeguarding and security of SNF and HLW is a high priority of DOE. Nevertheless, it may become necessary to escort future shipments with armed personnel or military personnel. In addition, shipment schedules may need to become secret, known only to the shipper, carrier and repository personnel. Notification of police and emergency response officials along a transportation route may require a higher standard of "need to know" protocols.

- How will DOE strike the appropriate balance between the need for police and emergency response pre-notification and the need to keep secret the timing and location of any particular shipment?
- Has a meaningful terrorism consequence assessment been conducted?
- Due to the elevated level of public concern about the safety of shipments, how will DOE and states provide credible public information about the relative safety of shipments?
- Are shipments safer if sent as a convoy?
- Will DOE consider “mixing up” the use of several routes as a way to lessen the threat of terrorism. If so, will more public safety officials require pre-notification?
- Time of day restrictions and avoidance of concentrated populations (i.e.: sporting events) will reduce the consequences of a terrorist attack.
- What is the value of sending decoys?
- What to do about NRC’s failure to respond to Nevada’s 1999 petition regarding safeguards?

Current OCRWM Plans

DOE currently does not plan to provide escorts for repository shipments. Additional research of the threat of sabotage is currently being conducted by the TEC Security Topic Group. Certain states such as Illinois escort the shipments as part of the state’s overall transportation inspection and notification program. DOE follows relevant regulations promulgated by the NRC regarding physical protection. DOE and NRC have conducted tests of casks using high energy explosive devices. DOE continues to explore the risks involved in radiological sabotage. The Department of Homeland Security has recently become involved in the assessment of risk.

Scenario #4. Emergency Federal Storage

Summary

Under this scenario, the repository is delayed 10-15 years, the PFS in Utah doesn’t open and there are no new commercial sites. An emergency at a reactor(s) requires almost immediate shipment of spent fuel to a federally-owned emergency storage facility.

Current OCRWM Plans

DOE does not currently have a contingency plan.

Scenario #5. PFS opens and becomes an integral part of the NWPA system.

Summary

The Private Fuel Storage Facility is a proposal by a consortium of utilities and the Skull Valley Indian Reservation in Utah to build a Monitored Retrievable Storage facility to begin operating by 2007. DOE's transportation program would be re-oriented towards rail and truck shipments to the Utah site. DOE would have to accelerate the effort to pick routes to Utah and accelerate the distribution of 180(c) training. A 24 mile rail spur needs to be constructed from the Union Pacific main rail line.

- Will DOE be able to accelerate the route selection process for both the rail and highway options?
- Will the rail spur be constructed on time?
- How will 180 (c) monies be distributed on time?

Current OCRWM Plans

DOE is not currently involved in the development of the project.

Scenario #6. Alternative mode and routing decisions are made that do not focus on reducing the number of shipments or minimizing the time and distance of shipments.

Summary

Under this scenario, due to policy or program decisions, the mix of modes and routes is significantly different than a maximum rail scenario that minimizes transit distances and maximizes use of Class 1 rail lines. For example, there might be a policy decision to limit the use of feeder routes from reactors to concentrate shipments on a few routes. Or, there might be a decision that equity requires the spreading of shipments along multiple routes. Or there might be a decision to use southern routes in the winter and northern routes in the summer. Or there might be a decision to minimize routes through populated areas.

- How will individual states react to poorly selected routes? Will the states engage in alternate routing selections and what will be DOE's response?

Current OCRWM Plans

DOE plans to ship predominantly by rail, but has yet to commit to using dedicated trains. DOE does not currently have a comprehensive mode and route selection plan. It currently turns to existing DOT regulations for guidance on highway routing and has no plan for rail shipments – instead negotiating with the carrier over the chosen route. OCRWM has developed a rail and highway route selection computer model called TRAGIS.

Scenario #7. A maximum southern routing strategy is adopted

Summary

The DOE would make a decision to move SNF on southern highways and rail lines. The rationale for such a routing decision is to avoid – to the extent possible – bad weather. As result, Arizona, Nevada and New Mexico will be the primary states carrying the burden of shipments.

- How will individual states react to limiting routes to southern states only?

Current OCRWM Plans

DOE has no plans for shipping exclusively through the south. DOE will utilize existing DOT regulations for shipment of SNF and negotiate routes with railroad carriers.

From a policy viewpoint, a southern route will have the benefit of avoiding inclement weather, but will impose the burden on Southern states. These routes may not in fact be the safest or the least overall risk.