

# Inland Marine Transportation System Capital Investment Strategy

**Jeanine Hoey, PE, PMP**

Program Manager  
15 December 2009



US Army Corps of Engineers  
**BUILDING STRONG®**



# Inland Marine Transportation System (IMTS) Capital Investment Strategy

- **IMTS Capital Investment Strategy Development**
  - ▶ Unconstrained project list
  - ▶ Prioritization Criteria
  - ▶ Level of Investment
  - ▶ Funding Model
    - cost sharing alternatives
    - revenue plan
  - ▶ Process Improvements
- **Recommendations**
- **Next Steps**



# Example IMTS Capital Investment Strategy Future Program with Current Revenues

Current Program \$170M/YR - Projects completed with efficient schedule																													
Project	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
OLMSTED LOCKS AND DAM, OHIO RIVER, IL & KY																													
EMSWORTH LOCKS AND DAM, OHIO RIVER, PA (Dam Safety)																													
MARKLAND LOCKS AND DAM, KY & IN (MAJOR REHAB)																													
<b>TOTAL Efficient Funding</b>	136	145	136	148	145	134	67	50	28	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Current Program \$170M/YR - Projects completed with constrained schedule																													
LOCKS AND DAMS 2, 3 AND 4 - MONONGAHELA RIVER, PA																													
CHICKAMAUGA LOCK, TN																													
KENTUCKY LOCK ADDITION, TN RIVER, KY																													
INNER HARBOR NAVIGATION CANAL LOCK, LA																													
<b>TOTAL Constrained Funding</b>	8	25	33	21	24	34	102	118	140	166	170	167	169	136	142	147	112	145	95	110	170	170	170	170	170	170	170	170	170
<b>TOTAL Program</b>	144	170	169	169	169	168	169	168	168	166	170	167	169	136	142	147	112	145	95	110	170	170	170	170	170	170	170	170	170

**NO NEW STARTS!!**



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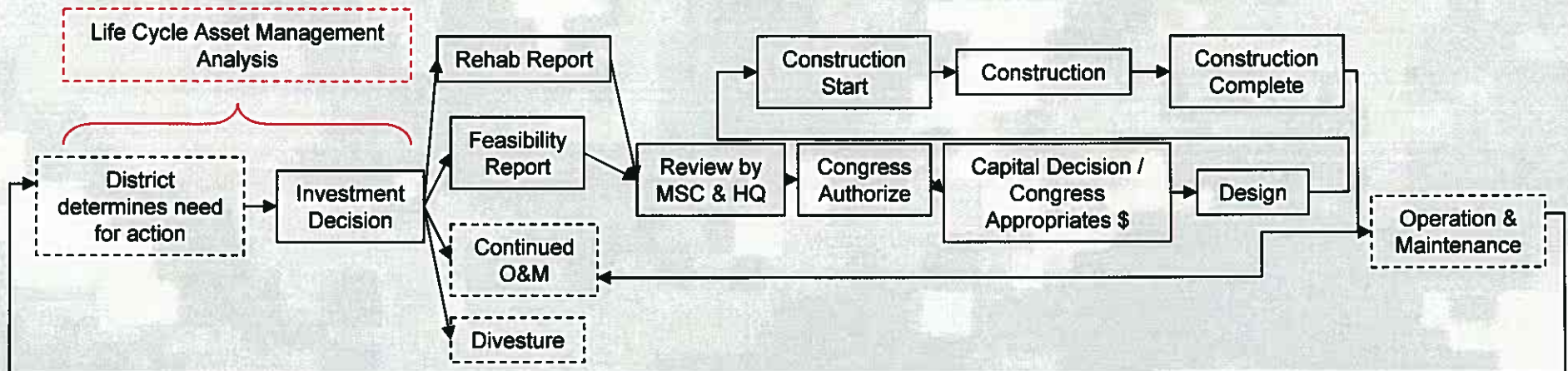
# IMTS Capital Investment Strategy Program Management Team

- **Program Manager:** Jeanine Hoey
- **IWUB:** Royce Wilken/Steve Little
- **HQ USACE:**
  - **Operations:** Jim Walker, Jeff McKee, Mike Kidby
  - **Programs:** Mark Pointon, Mary Anne Schmid, Sandy Gore
  - **Asset Management:** Jose Sanchez
- **Cost Engineer:** Mike Jacobs

- **Divisions:**
  - ▶ **LRD:** Bill Harder
  - ▶ **MVD:** Steve Jones
  - ▶ **NWD:** Eric Braun
  - ▶ **SAD:** Steve Hrabovsky
  - ▶ **SWD:** Glenn Proffitt/Jorge Gutierrez
- **IWR:** David Grier
- **ERDC:** John Hite
- **Economists:**
  - ▶ **Wes Walker**
  - ▶ **Keith Hofseth**



# Future Capital Projects Business Model



## Goals

- ▶ Timely and efficient planning process guided by a sound IMTS investment plan
- ▶ Facilities will be assessed for continued structural, operational and economic viability
- ▶ Priorities set to provide achievable national program resulting in reliable, sustainable Inland Marine Transportation System
- ▶ Investment plan supported through an appropriate mechanism
- ▶ 100% definition of project scope and target 80% confidence level, risk-based estimates of project costs and schedules at the completion of the feasibility report.
- ▶ Improved program and project management to ensure efficient, cost effective, timely completion
- ▶ Evaluate actual benefits to confirm feasibility report predictions
- ▶ Monitor and measure program and project performance
- ▶ Increased IWUB role throughout the process



# IMTS Capital Investment Strategy Unconstrained Project List

Unconstrained Program for Inland Marine Transportation System Construction (includes reductions for stimulus funded projects and FY10 amounts are President's Budget amounts)																																				
Division	District	Official Authorization Name (possible future)	Sub-Project Name	Waterway	Lock / Dam / Channel	Authorized	Not Based Cost Estimate	Identified Cost Estimate	Rank Order of Magnitude Estimate	Fully Funded Authorized Cost Estimate	Current Cost Estimate	Total Remaining Base Cost	Total Remaining Cost <sup>1</sup>	FY10 (President's Budget)	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30		
																																			Rough Order of Magnitude Estimate, Fully Funded based on 3%/Year	
<b>Phase 1 (Projects currently under construction) Unconstrained Schedule</b>																																				
<b>NEW CONSTRUCTION</b>																																				
LRD	LRN	CHECKAMAUGA LOCK, TN	Chickasaw Replacement Lock	Tennessee River	L	X				319.2	374.5	181.5	187.5	1.0	88.8	61.8	89.4	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LRD	LRN	KENTUCKY LOCK ADDITION, TN RIVER, KY	Kentucky Lock Addition	Tennessee River	L	X				833.0	734.2	397.1	429.0	1.0	36.8	50.9	118.7	98.7	64.5	58.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LRD	LRP	LOCKS AND DAMS 2, 3 AND 4, LOCKS MONONGAHELA RIVER, PA	Lower Mon 2,3,4 Locks Features	Monongahela River	L	X	X			458.8	1022.0	771.1	861.4	6.2	112.0	136.0	83.3	16.3	114.4	147.8	87.0	60.9	57.5	37.7	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LRD	LRP	LOCKS AND DAMS 2, 3 AND 4, DAMS MONONGAHELA RIVER, PA	Lower Mon 2,3,4, Dam Features	Monongahela River	D	X	X			291.2	416.3	129.9	142.4	0.0	0.0	0.0	0.0	121.4	18.4	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LRD	LRL	OLASTED LOCKS AND DAM, OHIO RIVER, IL & KY	Olvested L/D Construction	Ohio River	D	X	X			1389.0	2124.0	1017.0	1105.9	109.8	132.0	188.0	144.3	148.3	147.4	119.9	101.8	71.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MVD	MVN	TINER HARBOR NAVIGATION CANAL LOCK, LA	T-HAC	Gulf Intracoastal Waterway	L	X	X			714.0	1188.0	892.4	993.7	80.0	133.9	182.5	187.9	193.6	190.7	51.3	43.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<b>MAJOR REHABILITATION</b>																																				
LRD	LRP	EMSWORTH LOCKS AND DAM, OHIO RIVER, PA (Dam Safety)	Emsworth Major Rehab	Ohio River	D	X	X			72.8	163.8	44.3	44.8	25.0	10.3	4.8	3.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LRD	LRL	MARKLAND LOCKS AND DAM, KY & TN (MAJOR REHAB)	Markland Lock Major Rehab	Ohio River	L	X	X			17.4	35.4	6.4	6.4	1.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<b>Phase 2 (Projects currently authorized) Unconstrained Schedule</b>																																				
<b>NEW CONSTRUCTION</b>																																				
LRD	LRH	GREENUP LOCKS AND DAM, OHIO RIVER, KY & OH	Greenup Lock Extension PED and Construction	Ohio River	L	X	X				240.2	242.2	266.9		19.5	15.2	30.9	54.2	88.5	58.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LRD	LRL	JOHN T. MYERS LOCK AND DAM	Auxiliary Lock Extension	Ohio River	L	X	X			225.0	332.8	318.1	358.2		12.8	24.3	16.8	28.7	63.4	101.8	110.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MVD	MVS	LD 25 UPPER MISSISSIPPI	1200' Lock Addition	Mississippi River	L	X	X			400.0	347.7	347.7	450.0		1.7	1.8	2.1	2.1	2.3	6.1	17.3	34.4	94.0	122.8	125.9	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MVD	MVR	LD 22 UPPER MISSISSIPPI	1200' Lock Addition	Mississippi River	L	X	X			337.2	266.9	266.9	337.2		1.9	1.9	1.9	1.9	1.5	10.4	28.3	49.3	99.2	110.4	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MVD	MVS	LD 24 UPPER MISSISSIPPI	1200' Lock Addition	Mississippi River	L	X	X			464.6	332.2	332.2	464.6		0.0	0.0	0.0	0.0	0.0	0.0	4.8	7.6	10.1	26.1	47.0	124.4	128.3	116.0	0.0	0.0	0.0	0.0	0.0	0.0		

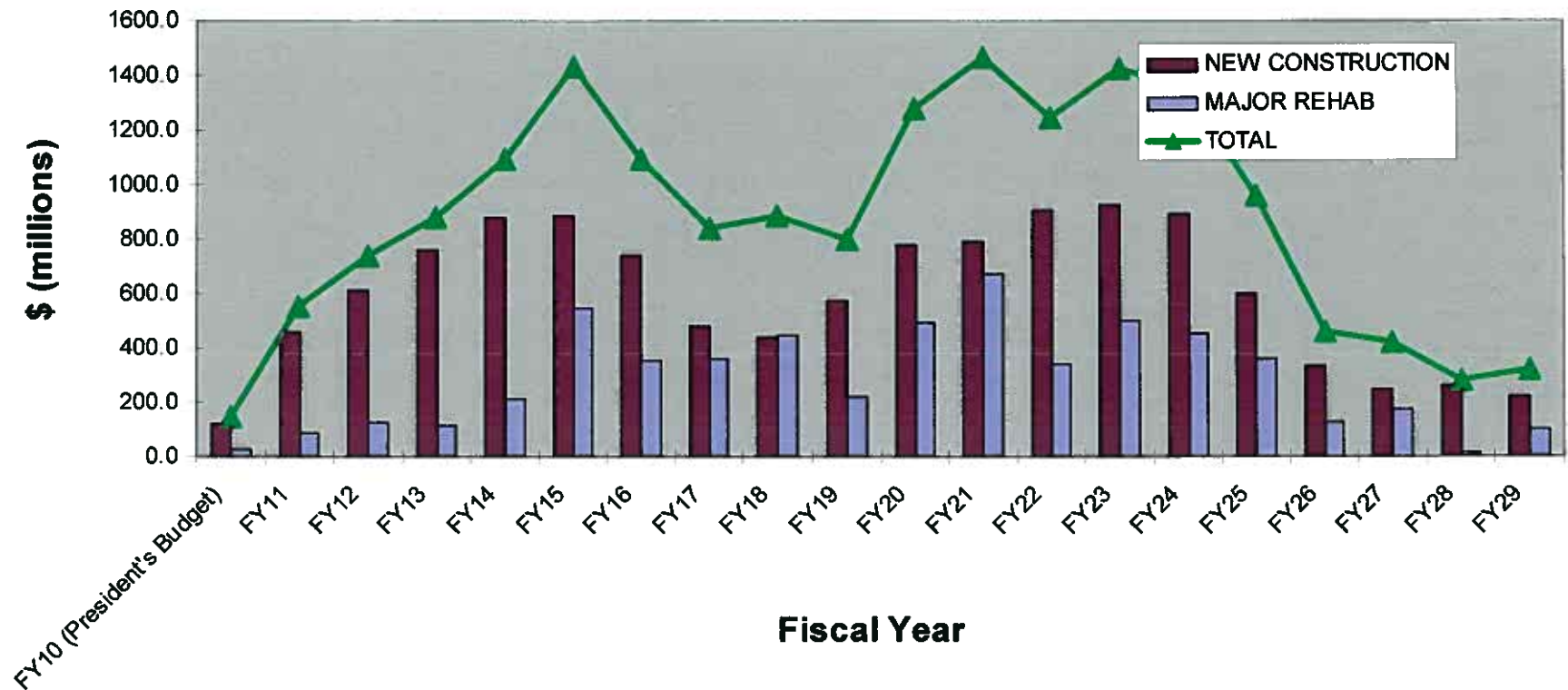
**IWUB Capstone Projects**

**IWUB High Priority Projects**

**IWUB Priority PED (Future Projects)**



## Inland Marine Transportation System Unconstrained Investment Need Fully Funded (3%/year)



The unconstrained 20 Year Program is \$18B



# Criteria Development

Criteria	Primary Criteria	Option A Weight	Option B Weight	Option C Weight	Option D Weight	Data needs	Remarks
Safety Risks	Y	50	40	30	30		life, limb and property - factors of safety
Dam Safety Action Classification (DSAC) Rating			N/A	N/A	N/A	DSAC Rating	Option B, C - DSAC consideration and rating factor, applies to projects
DSAC 1 (35)							
DSAC 2 (25)							
DSAC 3 (10)							
DSAC 4 (5)							
Other safety considerations							subject by writ
Risk and Reliability	Y	20	25	30	0		
Condition Assessment							
Structural Consequences of Failure							what, how
Economic Return	Y	20	25	30	60		
Benefit to Cost Ratio (BCR)						some data	no data through f
Net Benefits						some data	no data through f
Economic Impact						data exists for locks	closure c
Annual Ton-miles						data exists	segment
Other	Y	10	10	10	10		
Operational Problems that Affect Navigation Efficiency							i.e. outdr
Legal Requirements							accident environm congesti reductor
Environmental Societal Benefits							alternativ and rail c
Transportation Mode Cost Avoidance							capital in
Capacity of Existing Infrastructure compared with Forecasted Demand							
TOTALS		100	100				
Sequencing/Optimization Factors							
Funding Availability							
Inland Waterways Trust Fund balance							
Total Project Cost							
Balance to Complete							
Project Schedule							
New Start Project							
Project Underway							
Project Completing							

## Criteria to Prioritize Inland Marine Transportation System Projects

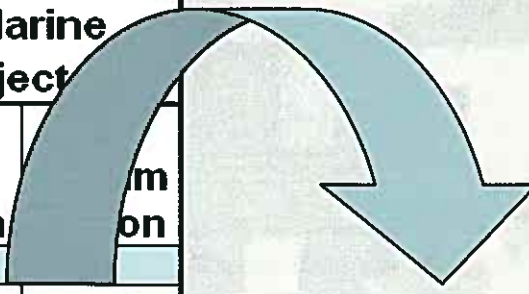
Criteria	Final Option	Interim Option
Risk and Reliability		35
Dam Safety Action Classification (DSAC) Rating: DSAC 1 - 35, DSAC 2 - 20, DSAC 3 - 10, DSAC 4 - 5		
Condition Assessment (Locks): F - 35, D- 20, C- 10, B - 5		
Economic Return	100	55
Net Benefits	60	35
Economic Impact	40	20
Other		10
Physical Completion		10
TOTALS	100	100

Working Draft



# Criteria Development

Criteria to Prioritize Inland Marine Transportation System Project		
Criteria	Final Option	Interim Option
Risk and Reliability		
Dam Safety Action Classification (DSAC) Rating: DSAC 1 - 35, DSAC 2 - 20, DSAC 3 - 10, DSAC 4 - 5		
Condition Assessment (Locks): F - 35, D- 20, C- 10, B - 5		
Economic Return	100	55
Net Benefits	60	35
Economic Impact	40	20
Other		10
Physical Completion		10
<b>TOTALS</b>	<b>100</b>	<b>100</b>



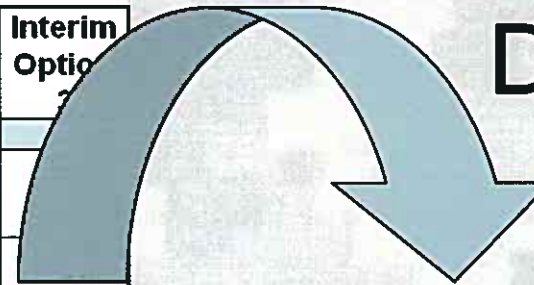
Criteria to Prioritize Inland Marine Transportation System Projects				
Criteria	Final Option	Interim Option 1	Interim Option 2	Interim Option 3
Risk and Reliability		35	35	35
Dam Safety Action Classification (DSAC) Rating: DSAC 1 - 35, DSAC 2 - 20, DSAC 3 - 10, DSAC 4 - 5				
Condition Assessment (Locks): F - 35, D- 20, C- 10, B - 5				
Economic Return	100	65	65	65
Net Benefits	30	25	15	10
BCR	10	10	10	5
RBRCR	20	10	20	30
Economic Impact	40	20	20	20
<b>TOTALS</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>



## Criteria to Prioritize Inland Marine Transportation System Projects

Criteria	Final Option	Interim Option 1	Interim Option 2	Interim Option 3
Risk and Reliability		35	35	
Dam Safety Action Classification (DSAC) Rating: DSAC 1 - 35, DSAC 2 - 20, DSAC 3 - 10, DSAC 4 - 5 Condition Assessment (Locks): F - 35, D- 20, C- 10, B - 5				
Economic Return	100	65	65	65
Net Benefits	30	25	15	
BCR	10	10	10	
RBRRCR	20	10	20	
Economic Impact	40	20	20	
<b>TOTALS</b>	<b>100</b>	<b>100</b>	<b>100</b>	

# Criteria Development



Criteria	Interim Option (Phase 1 & 2)	Interim Option (Phase 3)
Condition	40	60
See Table Below for breakout of weights		
See Table Below for breakout of weights		
Economic Return	60	40
Net Benefits	15	
BCR	5	
RBRRCR	25	
Economic Impact <i>(Impact on System of loss of pumpout)</i>	15	40
<b>TOTALS</b>	<b>100</b>	<b>100</b>

DSAC/Condition Rating	Phase 1 and 2	Phase 3
1/F	40	60
2/D	25	45
3/C	10	30
4/B	5	10
5/A	0	0



# IMTS Capital Investment Strategy Program Development

- Premise – projects are funded efficiently
- Prioritized list used to establish program
- Emphasize finishing what we started first
- What should be included in the 20 year plan?
- Total IMTS Capital Investment Program Target
  - \$380M/year
    - ▶ New construction - \$320M/year
    - ▶ Major rehab - \$60M/year
    - ▶ \$380M Program includes management reserve of \$30M
    - ▶ Additional out-year capacity available



# IMTS Capital Investment Strategy New Construction Program

PROPOSED NEW CONSTRUCTION PROGRAM																				
Project	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
OLMSTED LOCKS AND DAM, OHIO RIVER, IL & KY																				
LOCKS AND DAMS 2, 3 AND 4, MONONGAHELA RIVER, PA																				
CHICKAMAUGA LOCK, TN																				
KENTUCKY LOCK ADDITION, TN RIVER, KY																				
LD 25 UPPER MISSISSIPPI																				
GIWW, HIGH ISLAND TO BRAZOS RIVER, TX																				
LAGRANGE - ILLINOIS WATERWAY																				
INNER HARBOR NAVIGATION CANAL LOCK, LA																				
GREENUP LOCKS AND DAM, OHIO RIVER, KY & OH																				
LD 22 UPPER MISSISSIPPI																				
LD 24 UPPER MISSISSIPPI																				



Continuing construction  
Construction new start



# IMTS Capital Investment Strategy

## Major Rehabilitation Program

PROPOSED MAJOR REHABILITATION PROGRAM																												
Project	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030								
EMSWORTH LOCKS AND DAM, OHIO RIVER, PA (Dam Safety)	■	■	■																									
MARKLAND LOCKS AND DAM, KY & IN (MAJOR REHAB)	■																											
LOCK AND DAM 25, MISSISSIPPI RIVER, IL & MO		■	■	■																								
LAGRANGE LOCK & DAM, IL																												
LOWER MONUMENTAL LOCK AND DAM, WA	■	■	■																									
ILL WW THOMAS O'BRIEN LOCK & DAM			■	■	■																							
GREENUP DAM, OHIO RIVER, KY & OH			■	■	■	■	■	■																				
JOHN T. MYERS DAM MAJOR REHAB				■	■	■																						
GREENUP LOCKS, OHIO RIVER, KY & OH																												
MELDAHL DAM, OHIO RIVER, OH & KY					■	■	■	■	■	■																		
MONTGOMERY DAM SAFETY PROJECT (MAJOR REHAB)					■	■	■	■	■	■	■	■	■	■														
UM Mel Price													■	■														
UM LD25																												
UM LD24																												
NO. 2 LOCK, AR															■	■	■											
JOE HARDIN LOCK, AR															■	■												
WILLOW ISLAND LOCKS AND DAM, OHIO RIVER, OH & WV																	■	■	■	■	■	■						
MARMET LOCKS AND DAM, KANAWHA RIVER, WV																		■	■	■	■	■						
UM LD22																												■

 Continuing construction  
 Construction new start



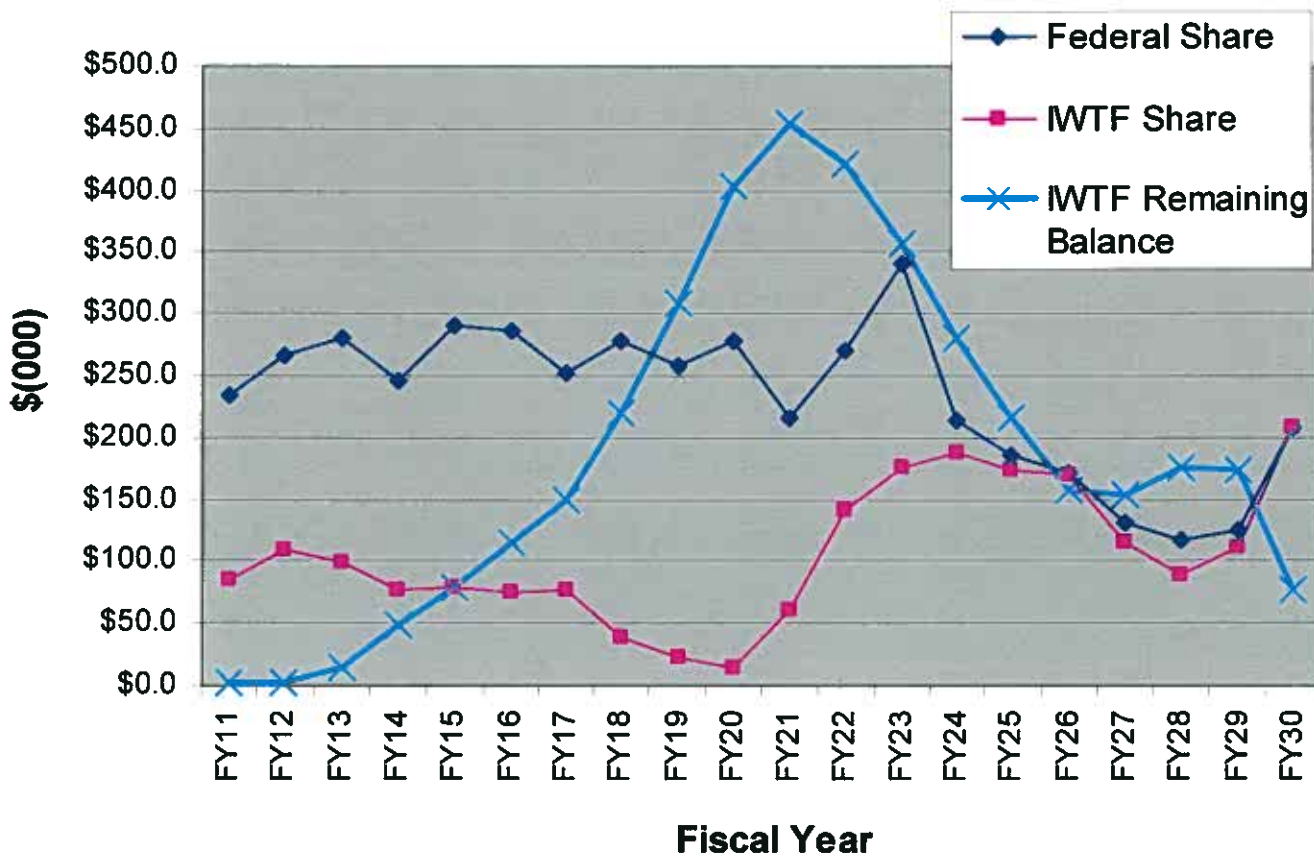
# Cost Sharing and Revenue Plan

- Evaluated many cost sharing options
- Cost share recommendation
  - ▶ 50% Federal / 50% IWTF Lock New Construction and Major Rehab above \$100M
  - ▶ 100% Federal Lock Major Rehab less than \$100M and Dams
  - ▶ \$270M/Year Federal
  - ▶ \$110M/Year IWTF
    - Requires 30% – 45% increase in fuel tax (\$0.06 – \$0.09 per gal)
- Cost sharing cap
- Revenue Plan - fuel tax remains the industry funding mechanism



# Cost Sharing Recommendation

**50% Federal / 50% IWTF Lock New Construction and Major Rehab above \$100M , 100% Federal Dams and Lock Major Rehab less than \$100M**



# IMTS Capital Investment Strategy

## Project Delivery Process Recommendations

- **Implemented Recommendations**
  - ▶ Risk-based cost estimates
  - ▶ Independent External Peer Reviews
  - ▶ Project Management Certification
- **Proposed Improvements**
  - ▶ IMTS Capital Investment Program Regulation
  - ▶ IWUB representative PDT members
  - ▶ Project Management Plan – IWUB Chairman and representative as signatories
  - ▶ Adopt applicable concepts of Milcon Model
  - ▶ Acquisition – Early Contractor Involvement
  - ▶ IWUB concurrence on new starts
  - ▶ IWUB status briefings
  - ▶ Measure and monitor results of recommended process improvements
- **Recommendations forwarded for consideration**
  - ▶ Design/Review Center(s) of Expertise
  - ▶ Standardized Designs
  - ▶ Continuing Contracts Clause
  - ▶ Emphasis on reduced O&M expenditures
  - ▶ *Use of new Materials/Technologies*



# Cost Efficiencies of Proposed IMTS Capital Investment Program

	Maximum (\$million)	Minimum (\$million)
Inefficient Funding	\$1,185	\$355
Other Cost Growth	\$925	\$230
Total	\$2,110	\$585

*Potential Max  
& Min Cost Avoidance  
over 20yrs*



# Additional Benefits of Proposed IMTS Capital Investment Program

- Avoiding more than \$2.8B additional benefits foregone
  - ▶ Looking only at projects that could be completed under the current scenario (reference slide 3)
  - ▶ Benefits foregone to date at Olmsted and Lower Mon alone are \$5.2B
- Improved reliability and efficiency of IMTS
- Additional benefits of achieving IMTS improvements over shorter timeframe
  - ▶ Environmental
  - ▶ Societal benefits
  - ▶ Safety
  - ▶ Energy



# Implementation Calendar

Typical Cycle for Inland Marine Transportation System Capital Investment Program												
Program Year	2012	2013	2014	2015								
	2011 Oct	2011 Nov	2011 Dec	2012 Jan	2012 Feb	2012 Mar	2012 Apr	2012 May	2012 Jun	2012 Jul	2012 Aug	2012 Sep
2012 Program Year Activities		Fall IWUB Meeting - Project Status Briefings			Winter/Spring IWUB Meeting -Project Status Briefings						Summer IWUB Meeting - Project Status Briefings	
	Execute Inland Marine Transportation System Capital Program for FY 2012											
2013 Program Year Activities		Fall IWUB Meeting			Winter/Spring IWUB Meeting						Summer IWUB Meeting - Approve and sign Project Management Plans	
					President's Budget released							
						Prepare Project Management Plans that define scope, cost and schedule for budgeted projects						
2014 Program Year Activities		Fall IWUB Meeting - Present and approve current unconstrained project list			Winter/Spring IWUB Meeting - Present prioritized project list. Recommend new starts for construction and studies, recommend any divestitures, appoint IWUB representative for PDT.						Summer IWUB Meeting	
	Prioritize Projects						Program Year Budget Development					
2015 Program Year Activities											Update Unconstrained Project List. Add and delete projects as required. Include BCR and Net Benefits data for projects that have completed studies. Move projects to current phase, update project costs, update criteria and weights and update project schedules if changed.	

# Next Steps

- ▶ Dec 2009 IWUB meeting
  - IWUB provide feedback to the team
- ▶ Spring 2010 IWUB meeting
  - Present final report
- ▶ Full implementation timeline dependent on Congressional action
  - WRDA legislation
  - Appropriations



