

Power Accounting & Power Repayment Presentation

Western Area Power Administration
and Bureau of Reclamation
December 15, 2009



U.S. Department of Energy
Western Area Power Administration



U.S. Department of the Interior
Bureau of Reclamation

Power Accounting & Repayment

- Legislation
- Accounting
 - Terms
 - Basics
 - Classifications
 - Treatment
- Financial Reporting
- Power Repayment



Legislation and Accounting

Presented by:

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Legislation

- Rivers & Harbors Act (P.L. 75-392) – 1937
- Reclamation Project Act (P.L. 76-260) – 1939
- Department of Energy Organization Act (P.L. 95-91) – 1977
- Coordinated Operating Agreement (P.L. 99-546) – 1986
- Subtitle G - Aging Infrastructure (P.L. 111-11) – 2009
- American Recovery and Reinvestment Act (ARRA) - 2009

Rivers & Harbors Act (P.L. 75-392) – 1937

- First authorization of CVP for construction and operation and maintenance of dams, canals, power plants, pumping plants, transmission lines and incidental works deemed necessary for the entire project
- Established the generation and sale of electric energy as a means of financially aiding and assisting the project

Reclamation Project Act (P.L. 76-260) – 1939

- Provided for the repayment of CVP construction charges and authorized the sale of water to municipalities and other public corporations or agencies
- Establishes a 50 year repayment as a matter of policy

Department of Energy Organization Act (P.L. 95-91) – 1977

- Established the Department of Energy
- Transferred power marketing and power repayment functions, including the construction, operation and maintenance of power transmission lines and attendant facilities associated with Reclamation projects from DOI to DOE

Coordinated Operating Agreement (P.L. 99-546) – 1986

- Requires the Secretary of Interior to include in new or amended contracts for the delivery of water within the CVP a provision requiring an adjustment of rates if the rate is not adequate to recover appropriate share of the existing Federal investment in the project by the year 2030*
- The Secretary of Interior is required to include both capital and operation and maintenance deficit recovery (with interest) in new or amended contracts for the delivery of water

* Pending interpretation from the DOI Solicitor

Subtitle G - Aging Infrastructure (P.L. 111-11)

- 2009

- Authorizes extraordinary operation and maintenance work be repaid within 50 years. Interest begins from the year in which the work is undertaken.
- Any extraordinary operation and maintenance over \$100,000 is authorized for long term repayment.

American Recovery and Reinvestment Act (ARRA) – 2009

- Provided for job preservation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization
- Reclamation –
 - Must be obligated by September 30, 2010
 - Must be repaid within 50 years with interest
- Western –
 - Borrowing Authority
 - Repayment terms to be determined



Accounting

Capital versus Expense

Accounting Terms:

- Additions – facilities or equipment that are installed and provides benefits beyond the original specifications of the facility or plant.
- Capital – Asset life ≥ 2 years and meets Agencies' thresholds
- Expense – Agencies' annual cost of operations. Including labor, maintenance, etc.
- Extraordinary Maintenance – major, nonrecurring maintenance intended to ensure the continued use of the authorized project benefits.
- RAX (Reclamation) – Replacements, Additions, and Extraordinary Maintenance

Accounting Terms continued:

- Replacements – the act of replacing major sections or pieces of equipment to bring a facility to a state similar to the level of services when it was constructed or installed.
- Retirements – property which has been removed, sold, abandoned, destroyed, or which for any cause, has been withdrawn from service.
- RRAD's (Western) – Retirements, Replacements, and Additions
- Unit of Property – (a) an item that will be replaced as a complete unit one or more times within the period of analysis and (b) an item that is significant in terms of annual maintenance expense but is not ordinarily replaced as a part of the normal recurring maintenance program. The period of analysis is generally considered to be 100 years.

Accounting Basics

- Activities are primarily accounted for in two ways:
 - Capital Investment
 - Annual Expense

Guidance for Accounting Classifications

- **What tools are available for the finance staff to use in determining whether to capitalize or expense an activity?**
 - Federal Accounting Standards Advisory Board (FASAB)
 - Replacement Manual (Blue Book)
 - Agency Accounting Policy/Procedures
 - Subject Matter Experts (i.e. Engineers & Project Managers) – for clarification of activity

Capital Investment vs. Annual Expense

Capital Investment

- Benefits future periods (has an estimated life ≥ 2 years)
- Acquisition of a fixed asset
- Is for RRAD's/RAX*
- Meets threshold:
- Fixed Assets
- Capitalized movable equipment
- Software^

^Threshold differences between Reclamation and Western are defined on the following slide.

Annual Expense

- Benefits current period (e.g., most O&M)
- Is for routine maintenance (e.g., painting, replacing insulators, etc.)
- Is for extraordinary maintenance (RAX)*
- For equipment and software if less than capitalized threshold, regardless of benefit period

*RAX can be capitalized or expensed depending on Blue Book.

Capital Investment

- Benefits future periods (has an estimated life ≥ 2 years)
- Is for new construction
- Is for RAX/RRAD's projects as defined by the Blue Book
- When adding to, or replacing an existing asset, investment generally will substantially enhance performance or increase life of asset
- Meets threshold:
 - Fixed Assets ($\geq \$0$)
 - Capitalized Movable Equipment ($\geq \$15K$)
 - Software:
 - **Reclamation**: If software costs $\geq \$100K$ and has a service life of ≥ 2 years
 - **Western**: If software costs $\geq \$150K$ and has a service life of ≥ 3 years

Capitalization Criteria for RAX Items

- Replacements, Additions, & Extraordinary Maintenance Costs
 - Reclamation utilizes the Blue Book and FASAB for proper accounting classification of costs.
- The Blue Book Appendix B is used to determine if a cost is capitalized or expensed for replacement items.
 - Replaceable unit of property is capitalized
 - Maintenance item is expensed

Examples of Capital Investments

- **FIXED ASSETS**
 - New Construction
 - Installing and replacing major items (units of property per “Replacements” book) – RRAD’s & RAX
 - Structures
 - Remote Terminal Unit (RTU)
 - Transformer
 - Circuit Breaker
 - Generator
 - Turbine
- **CAPITALIZED MOVABLE EQUIPMENT (CME)**
- **SOFTWARE IN DEVELOPMENT (SID)**

Annual Expense

- Benefits current period (e.g., most O&M)
- Is for routine maintenance (e.g., painting, replacing gauges, etc.)
- For equipment and software if less than capitalized threshold, regardless of benefit period
- **Reclamation**: RAX projects as defined by the Blue Book and FASAB

Examples of Annual Expenses

- OPERATIONS

- System operation and load dispatching
- Transmission planning
- Power plant daily operations

- MAINTENANCE – includes RAX

- Inspections
- Parts replacement, routine work, painting
- Aerial inspections
- Vegetation management
- Power Marketing – Rates, Billing, Contracts

Replacements Manual

aka “Blue Book”

Replacements

Units

Service Lives

Factors



U.S. Department of Energy
Western Area Power Administration



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Bureau of Reclamation

May 2006

Capital vs. Expense Examples

- Example #1: 50-year service life turbine replacement
- Example #2: New 230 kV Substation
- Example #3: Replacement of a failed solid-state excitation transformer
- Example #4: New SCADA System Master Control Center
- Example #5: New Financial and Accounting Software
- Example #6: Shasta Double Breaker/Double Bus
- Example #7: New Melones Substation

Example #1: 50-year service life turbine replacement

PRINCIPAL ITEMS, UNITS OF PROPERTY, SERVICE LIVES AND MAINTENANCE ITEMS
UNITS OF PROPERTY HANDBOOK, TABLE 6

FERC ACCT	FFS ACCT	PRINCIPAL ITEMS	UNIT OF PROPERTY REPLACEABLE DURING PERIOD OF ANALYSIS	SERVICE LIFE (Years)	TYPICAL MAINTENANCE ITEMS	JUSTIFICATION NUMBER
WATERWHEELS, TURBINES, AND GENERATORS (CONTINUED)						
333	165	WATERWHEELS, TURBINES, AND GENERATORS, TURBINES AND PUMP/GENERATOR (FROM CONNECTION WITH PENSTOCKS OR FLUME TO TAILRACE) (continued) <u>Reaction and Impulse Type and Pump/Turbines</u>				
		Turbine runner and shaft	Runner, turbine	50	Cone, blades, hub, bolts, buckets, keys, and main shaft	46
		Pump/Turbine runner and shaft with 1,500-hp (1,120 kW) prime mover or larger	Impeller/Runner	50		46
			Wearing rings, runner	20		74
		<u>Reaction Type</u>				
		Scroll case assembly	None. See note above.		Stay ring, case, head cover, bottom ring, facing plate, pit liner, platforms	
		Wicket gate assembly	None. See note above.		Wicket gate, gate operating ring and linkage, servomotor, connecting rod, stems and bearings, grease pump and motor	

Accounting Treatment = CAPITAL

Example #2: New 230 kV Substation

Western Accounting Policy on Property Plant & Equipment (PP&E)
Guidelines for Distinguishing PP&E Plant & Capital Equipment:

- Land – which includes land rights
- Facilities – includes all structures, additions, or improvements to structures (not normal Maintenance)
- Construction – includes all elements associated with construction in progress
- Utilities – includes water and sewage systems; heating, cooling, and power systems; communication systems; and fire prevention systems

Accounting Treatment = CAPITAL

Example #3: Replacement of a failed solid-state excitation transformer

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FERC ACCT	FFS ACCT	PRINCIPAL ITEMS	UNIT OF PROPERTY REPLACEABLE DURING PERIOD OF ANALYSIS	SERVICE LIFE (Years)	TYPICAL MAINTENANCE ITEMS	JUSTIFICATION NUMBER
WATERWHEELS, TURBINES, AND GENERATORS (CONTINUED)						
333	165	WATERWHEELS, TURBINES, AND GENERATORS, TURBINES AND PUMP/GENERATOR (FROM CONNECTION WITH PENSTOCKS OR FLUME TO TAILRACE) (continued) GENERATORS, GENERATOR/MOTORS, PUMP MOTORS, EXCITERS, AND APPURTENANCES				
		Bearings, including their lubricating and cooling systems	None, it is not expected that these units will require replacement during the period of analysis. Bearing surfaces and miscellaneous parts will be replaced as a part of maintenance		Runner, stationary plate (shoe), guide bearing, lubricating and bearing cooling system, protective relays and devices, gages, recorders, piping	61, 62
		Excitation system	Exciter, generator (main, pilot or motor-exciter set)	45	Armature field pole, commutator, brushes, diode, silicone controller rectifier, fuse, current transformer, bearings, frame, rheostat, field circuit breaker, contactor, relay, wiring	25
		Frame, housing, air cooling, and fire protection systems	None.		Generator frame, bearing brackets, anchor bolts and soleplates, housing, stairs, platforms, railings, coolers, piping, valves, brake and jacking equipment, fire protection system, lighting within housing, wiring, terminal boxes, accessories	
		STARTING MOTORS	There are only a few in existence; treat similar to Electric Prime Movers.			

Accounting Treatment = Annual Expense

Example #4: New SCADA System Master Control Center

- New Addition –
 - Agency's Accounting Policy on Property Plant & Equipment (PP&E)
- Replacement –
 - Blue Book (see next slide)

Accounting Treatment = CAPITAL

Example #4: New SCADA System Master Control Center

PRINCIPAL ITEMS, UNITS OF PROPERTY, SERVICE LIVES AND MAINTENANCE ITEMS
UNITS OF PROPERTY HANDBOOK, TABLE 6

FERC ACCT	FFS ACCT	PRINCIPAL ITEMS	UNIT OF PROPERTY REPLACEABLE DURING PERIOD OF ANALYSIS	SERVICE LIFE (Years)	TYPICAL MAINTENANCE ITEMS	JUSTIFICATION NUMBER
INSTALLED SUPERVISORY CONTROL AND COMMUNICATIONS EQUIPMENT (CONTINUED)						
397	180	INSTALLED SUPERVISORY CONTROL AND COMMUNICATIONS EQUIPMENT <i>(continued)</i>				
		SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)/ENERGY MANAGEMENT SYSTEM (EMS)	SCADA Master computer with associated main memory, and back-up storage devices, Include intersite data-logging system.	10	Disk drives, Hard/floppy disks, etc.	55
			Remote Terminal Unit, (RTU), input/output device	10	Individual consoles, panels, cubicles, switches, pushbuttons, indicating lights, relays, tone transmitters and receivers, wiring	55
		Solar voltaic power supply system	Solar Voltaic Power Supply – 100 watts and above	15	Panel, photo-voltaic cells, battery, battery charger, and voltage regulator	49
		Fiber Optic Cable, Optical Ground Wire (OPT-GW), and All Dielectric Self Supporting (ADSS)	Information Channels	50	Connector replacement (Installed with/on Wood Poles or with/on Steel Poles)	26

Accounting Treatment = CAPITAL

Example #5: New Financial and Accounting Software

- Western Accounting Policy – Capitalization of Internal Use Software
 - Has a service life ≥ 3 years and a cost of \geq \$150k upon completion of the software development phase or upon purchase of commercial off-the-shelf (COTS) software.
- Reclamation Accounting Policy – Capitalization of Internal Use Software
 - Has a service life ≥ 2 years and a cost of \geq \$100k upon completion of the software development phase or upon purchase of commercial off-the-shelf (COTS) software.

**Accounting Treatment = CAPITAL or EXPENSE
(depending on if thresholds are met)**

Example #6: Shasta Double Breaker/Double Bus

- Project Description: reconfigure from the existing main and transfer bus scheme to a double breaker double bus scheme.
- Funding Source: Customer Advances
- How do we account for this?
 - Replacement of existing breaker – Blue Book
 - Additional breaker – Western’s Accounting Policy on Property Plant & Equipment (PP&E)

Accounting Treatment = CAPITAL

Example #6: Shasta Double Breaker/Double Bus

PRINCIPAL ITEMS, UNITS OF PROPERTY, SERVICE LIVES AND MAINTENANCE ITEMS
UNITS OF PROPERTY HANDBOOK, TABLE 6

FERC ACCT	FFS ACCT	PRINCIPAL ITEMS	UNIT OF PROPERTY REPLACEABLE DURING PERIOD OF ANALYSIS	SERVICE LIFE (Years)	TYPICAL MAINTENANCE ITEMS	JUSTIFICATION NUMBER
334	170	ACCESSORY ELECTRICAL EQUIPMENT- POWERPLANTS AND PUMPING PLANTS (ACCESSORY ELECTRICAL EQUIPMENT FOR PUMPING PLANTS – For plants with multiple units totaling 1,500-hp and above, use the following units of property as they apply.)	None for below 1,500-hp. It is expected that replacements as required will be made as a part of maintenance.			
		BUS STRUCTURE AND CONNECTIONS, COMPLETE	None. The bus structure, main or station service, for each unit or station power source is not expected to be replaced at one time as a unit of property. Wires, cables, insulators, etc., should be repaired and replaced as a part of maintenance.		Structure and supports, cable, bus, conduit, protective housing, instrument transformers, surge protective equipment, generator neutral system, disconnecting switches, insulators, fittings, and accessories	
		POWER CABLES	Cable-power, generator and pump motor	40	Splices, supports	8
		TRANSFORMERS	Transformer, Station Service	35	Bushings, tank, core, coils, tap changer	68
		SWITCHING EQUIPMENT	Circuit Breaker—unit, complete	35	Bushings, contacts, operating mechanism, tanks and frame, oil pumps and motors, air compressors and motors, bushing current transformers	58
			Motor Control Switchgear – associated with units 3,000-hp (2,240 kW) and above	35	(See circuit breaker typical minor items above) Reduced voltage starting equipment.	58

Accounting Treatment = CAPITAL

Example #7: New Melones Substation

- Funding Source: Customer Advances
- Accounting treatment: same as Example #2
 - Western Accounting Policy on Property Plant & Equipment (PP&E)

Accounting Treatment = CAPITAL

Financial Reporting

- Both Agencies report costs for inclusion in power repayment.
- Capital –
 - Reclamation Schedule 1 – Plant in Service detail
 - Western Schedule 1 – Plant in Service detail
- Expenses –
 - Reclamation Schedule 16 – Operating/Program Expense
 - Western Schedule 11 – Operating Expenses

Western Power Repayment



Presented by:

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Sierra Nevada Region



Western's Basic Rate Policy

- **U.S. Department of Energy Order RA 6120.2:**
 - Duration of Repayment Period (Section 10(d)(1)): “ Unless otherwise prescribed by law, each dollar of **investment** is to be repaid with interest within a period not-to exceed **50 years**. Repayment period of less than 50 years may be established when the facilities involved have useful life expectancies of less than 50 years. Shorter repayment periods are appropriate for
 - (a) replacement of power facilities
 - (b) transmission facilities which are developed and managed as transmission systems rather than as adjuncts to generating projects.”
 - “[R]epayment periods may be adjusted... if changed conditions indicate a different estimated useful life expectancy.”
 - (Section 10(d)(2)): “Start of repayment period: ...fiscal year following the fiscal year in which the investment goes into commercial service.”
- **Transmission Infrastructure Program (TIP)**



Power Repayment:

Capital – multiple yrs

- New Investment – 50 yr
- Additions – 50 yr
- Replacements – Based on Blue Book
- RRAD's (Western) – Based on Blue Book or max 50 yr life
- RAX (Reclamation) – Based on Blue Book or max 50 yr life
- Capitalized Moveable Equipment (CME) – 5 to 12 yr
- Software – 5 yr

Expense – 1 yr

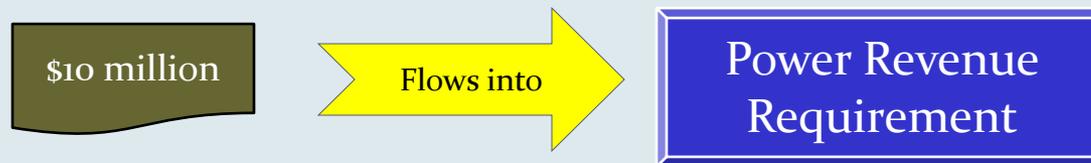
- Operations – 1 yr
- Maintenance – 1 yr
 - Includes RAX (Reclamation)
- Interest on Investment – 1 yr
- Purchased power and Wheeling – 1 yr



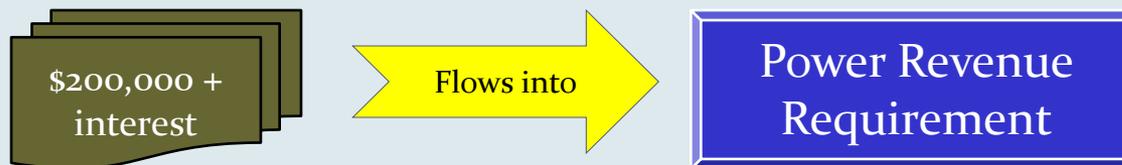
How Does Cost Assignment Effect the Customer's Power Rate?

Example of a \$10 million cost

- If deemed an Annual Expense, then a single period of recovery:
 - The full \$10 million flows into O&M and is recovered in one year



- If deemed a Capital Cost, then Multiple periods of recovery:
 - The capital investment (including interest during construction) is recovered over 50 years.
 - For example: Assuming an average annual repayment over 50 years would equal approximately \$200,000 annually plus interest.





Relationship of Accounting & Repayment

Examples of Work, Funding Sources, and Cost Recovery						
Work Request for Funding			Funding Source and Accounting Treatment			Power Cost Recovery
Example No.	Description	Type of Work	Estimated Service Life per Blue Book or Accounting Policy	Appropriations Including BOR	Customer Funding	Appropriations & Customer Funding
1	Turbine	Replacement	50 years	Cap	Cap	50 years
2	New 230KV Substation	New Investment	Multiple components each > 2 years	Cap	Cap	50 years
3	Excitation Transformer	Maintenance	N/A	Exp	Exp	1 year
4	New SCADA System	Replacement	10 years	Cap	Cap	10 years
5	New Finance & Accounting Software	Software	Agencies' threshold	Cap	Cap	5 years
6	Shasta Double Bus/Breaker	Addition	Multiple components each > 2 years	Cap	Cap	50 years
7	New Melones Substation	New Investment	Multiple components each > 2 years	Cap	Cap	50 years



Reclamation's ARRA Program Examples

Examples of Work, Funding Sources, and Cost Recovery						
Work Request for Funding			Funding Source and Accounting Treatment			Power Cost Recovery
Example No.	Description	Type of Work	Estimated Service Life per Blue Book or Accounting Policy	Appropriations Including BOR's ARRA	Customer Funding	Appropriations & Customer Funding or ARRA*
8	O'Neill Pump/Generation Plant – Replace unit breakers	Replacement	35 years	Cap	Cap	35 years
9	Trinity Powerplant life safety code	Maintenance	1 year	Exp	Exp	1 year
10	Folsom Powerplant Transformer – K1/KA2 replacement	Replacement	40 years	Cap	Cap	40 years
11	Red Bluff Office life safety code	Maintenance	1 year	Exp	Exp	1 year
12	Folsom Powerplant fixed wheel gate refurbished (RAX & Power)	Maintenance	1 year	Exp	Exp	1 year
13	Shasta Dam spillway repair (RAX & Multi Purpose)	Maintenance	1 year	Exp	Exp	1 year

* ARRA repayment is under review by Western; BOR ARRA legislation requires repayment with 50 years



Priority of Repayment

- Priority of Repayment guidelines
 - Spelled out in RA 6120.2

- Order of Repayment
 1. Annual Expenses (O&M, Purchase Power, Interest, etc.)
 2. Deficits
 3. Investments
 1. Repayment Period
 2. Highest Interest Bearing First



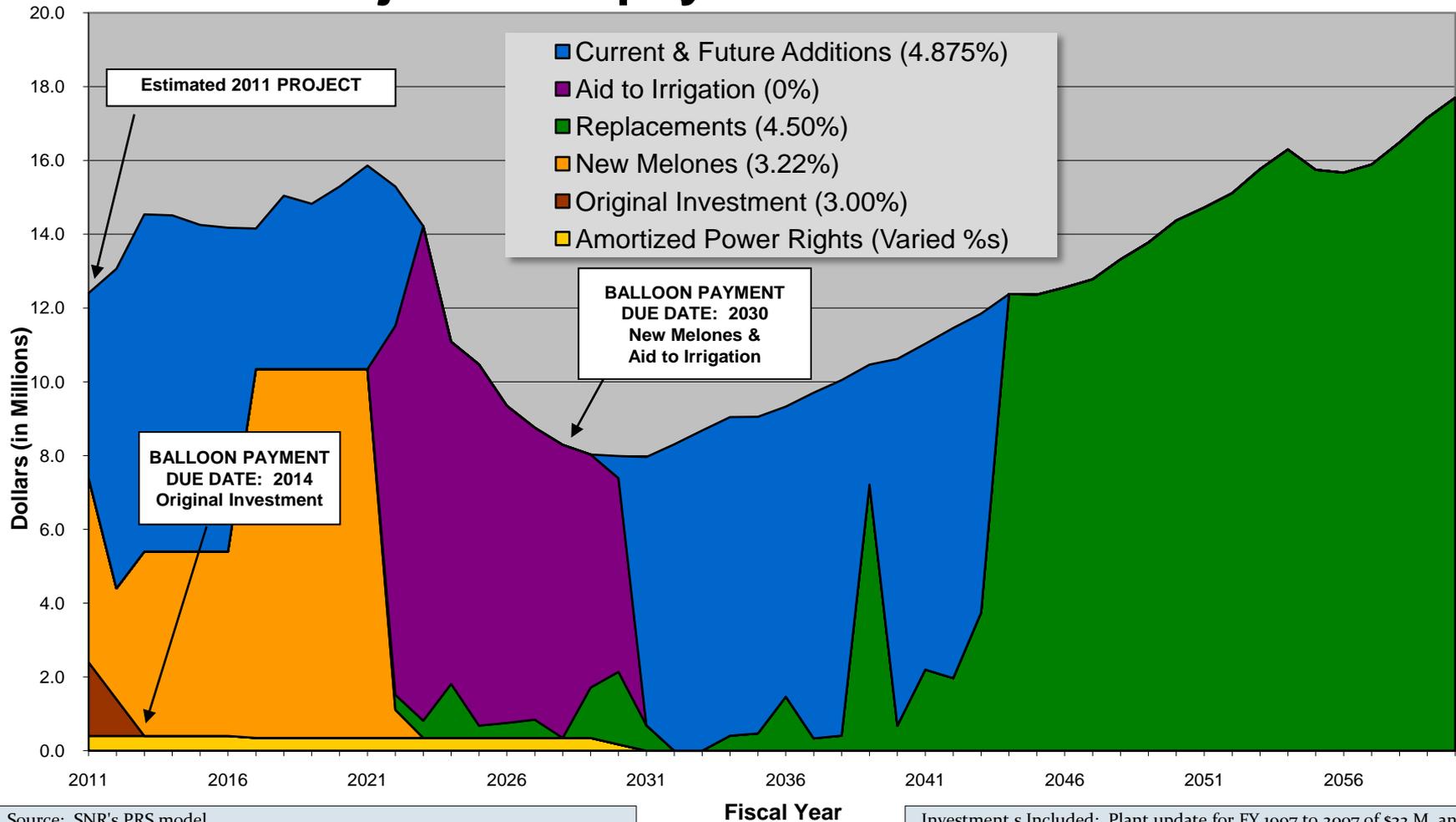
CVP Power due dates

- Original Investment – 2014
- New Melones – 2030
- Aid to Irrigation – 2030
- Plant additions – 50 years after investment placed into service
- Replacements – varies, up to 50 years after investment placed into service
- ARRA (BOR) – within 50 years

Repayment



SNR Projected Repayment of CVP Investment



Source: SNR's PRS model.
 Response to customer request during 10-14-09 customer meeting
 Note: This is an estimated project repayment for discussions purposes only.

Investments Included: Plant update for FY 1997 to 2007 of \$32 M, and
 FY 2008 of \$44 M.
 Projected plant for funded projects of about \$125 m. Date: 10-29-09



Questions?