

# The Net Salvage Dilemma



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\*The following presentation includes the views and opinions of California Public Utility Commission (CPUC) staff and do not represent the formal opinions of the CPUC.

# What is the Net Salvage Dilemma?

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How should public utilities charge their customers for a **future unknown cost\*** associated with a **service provided in the present?**

\*this cost may be realized up to and over 100 years into the future.

# Definition of Net Salvage

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- The future net cost (revenue) of retiring an asset in service.
- **Net Salvage = Gross Salvage – Cost of Removal**  
(*i.e.*, The scrap value of the asset minus the costs of retirement. Retirement costs include rising environmental remediation and labor costs)

# Current Prevailing Net Salvage Policy

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- ❑ Under Generally Accepted Accounting Principles (GAAP), depreciation accrual is calculated by dividing an asset's service cost by its estimated useful life.\*
- ❑ This service cost includes the original historical cost **minus future estimated net salvage**.\*
- ❑ Thus, **future estimated** net salvage is lumped into depreciation expense (a **historical known cost**), amortized along with it over the estimated useful life of utility assets, and deducted from ratebase when collected from customers.
- ❑ Future net salvage is determined based on previous year ratios between historical plant investment and historical net salvage on those assets. This ratio uses the *nominal* investment cost from year 0 and the *nominal* net salvage cost from year of retirement (typically retirement year ranges from 50-100) and projects that ratio for current equipment. As such, inflation is embedded in this ratio.

\* Wolf and Fitch, Depreciation Systems, 1996.

# Short History of Current Net Salvage Policy

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- ❑ Original net salvage policies assumed net salvage to be positive (asset scrap value at retirement offset asset retirement costs). This is reflected in the term's emphasis on "salvage" rather than "cost".
- ❑ Net salvage policy was developed as a way to "reimburse" customers for the total service cost reductions that net salvage revenues provided utilities. These reductions were reflected in lower depreciation expenses for ratepayers.
- ❑ **The cost of retiring an asset has surpassed retirement salvage values for over forty years\*. These costs continue to rise.**
- ❑ As a result, net salvage today is often referred to as *negative net salvage* or *net cost of removal*. It generally increases the depreciation expense that ratepayers pay as part of utilities' revenue requirement.



# Goals for Net Salvage Policy

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To:

- (1) Distribute costs to ratepayers equitably over time, while minimizing these costs to the extent possible
- (2) Improve utility accountability for net salvage funds collected from ratepayers
- (3) Ensure that net salvage funds are available at the time they are needed
- (4) Minimize perverse incentives

# Does Current Net Salvage Policy Meet These Goals?

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No. (1) Current policy does not equitably distribute costs to ratepayers over time, while minimizing these costs to the extent possible.

No. (2) Current policy does not ensure strong utility accountability for net salvage funds collected from ratepayers.

No. (3) Current policy does not ensure that net salvage funds are available at the time they are needed.

No. (4) Current policy does not minimize perverse incentives.

# Challenges to Current Net Salvage Policy

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- ❑ Limited accountability
  - Annualized net salvage collected from customers is not earmarked to pay for actual net salvage costs. Thus, they may not be available when utilities need them.
  - Given this reality, PU commissions and ratepayers may not be comfortable with annual collection of 3-4 times current net salvage costs **that will be absorbed into utility cash flow.**
- ❑ Inadequate Assumptions
  - Assumptions used for estimates of future net salvage costs should be re-evaluated to gain more accurate estimates.
- ❑ Tenuous Connection to Rate base
  - Net salvage connection to rate base is tenuous, resulting in illogical outcomes.
- ❑ Over-collection due to inflation
  - There is a loss of value in the way utilities calculate and manage collected net salvage dollars – by way of inflation-requiring utilities to collect more.

# Accountability Problem - The California Example

	Actual NNS	Annualized NNS Charged to Ratepayers	Difference Between Actual NNS Cost and Annualized NNS charged to ratepayers
PG&E TO-11	20.3 million (2007) <sup>[1]</sup>	52.8 million (2007) <sup>[2]</sup>	32.5 million
SCE	\$170 million	\$220 million	\$50 million
SDG&E TO, Oct 2007-2008 recorded	\$6.28 million (2007)	\$9.23 million (2007)	\$2.95 million
PG&E TO case	\$55 million	\$16 million	\$39 million

The difference between actual NNS Cost and NNS Charged to ratepayers represents amount that is absorbed into cash flow, but is not earmarked for actual future net salvage expenditures.

<sup>[1]</sup> PGE TO-11, Exhibit 10, Page 12 of 25, Table PGE 10-1: Pacific Gas and Electric Company Period I Negative Net Salvage.

<sup>[2]</sup> Ibid.

# Inadequate Assumptions...

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## □ **New Environmental Technologies and Rising Salvage Values**

- New environmental technologies are reducing the impact that electric utility plants have on the environment. At the same time the salvage value of metals (scrap steel, copper) has been increasing rapidly as their global supplies decline. These may reduce future net salvage costs and are currently not considered in net salvage projections. \*

## □ **Economies of Scale**

- Potential upcoming mass retirements of assets should be evaluated from Iowa curves (survivor curves). Economies of scale associated with mass retirements will reduce per unit costs of net salvage.

\*<http://demolitionscrapmetalnews.com/?p=31> ; accessed website 8/27/08.

# Tenuous Net Salvage and Rate Base connection

## Cumulative Impact of Net Salvage Policy on Ratepayers in the Long-Run

Ex: NS = \$50 million for asset with Service Life of 50 years.

Year	Salvage		Rate Base		Total Yearly Impact	Current Dollars	Cumulative Impact
	Annual Amount	Revenue Requirement Impact	Rate Base Impact	Revenue Requirement Impact			
1	\$1,000,000	\$1,020,000	(\$500,000)	(\$103,500)	\$916,500	\$916,500	\$916,500
2	\$1,000,000	\$1,020,000	(\$1,500,000)	(\$310,500)	\$709,500	\$675,714	\$1,592,214
3	\$1,000,000	\$1,020,000	(\$2,500,000)	(\$517,500)	\$502,500	\$455,782	\$2,047,997
4	\$1,000,000	\$1,020,000	(\$3,500,000)	(\$724,500)	\$295,500	\$255,264	\$2,303,261
5	\$1,000,000	\$1,020,000	(\$4,500,000)	(\$931,500)	\$88,500	\$72,809	\$2,376,070
6	\$1,000,000	\$1,020,000	(\$5,500,000)	(\$1,138,500)	(\$118,500)	(\$92,848)	\$2,283,222
7	\$1,000,000	\$1,020,000	(\$6,500,000)	(\$1,345,500)	(\$325,500)	(\$242,893)	\$2,040,329
8	\$1,000,000	\$1,020,000	(\$7,500,000)	(\$1,552,500)	(\$532,500)	(\$378,438)	\$1,661,891
9	\$1,000,000	\$1,020,000	(\$8,500,000)	(\$1,759,500)	(\$739,500)	(\$500,523)	\$1,161,368
10	\$1,000,000	\$1,020,000	(\$9,500,000)	(\$1,966,500)	(\$946,500)	(\$610,122)	\$551,246
11	\$1,000,000	\$1,020,000	(\$10,500,000)	(\$2,173,500)	(\$1,153,500)	(\$708,149)	(\$156,903)
12	\$1,000,000	\$1,020,000	(\$11,500,000)	(\$2,380,500)	(\$1,360,500)	(\$795,456)	(\$952,359)
13	\$1,000,000	\$1,020,000	(\$12,500,000)	(\$2,587,500)	(\$1,567,500)	(\$872,843)	(\$1,825,202)

NNS Salvage Collection  
Year 11:  
Rate base benefits exceeds costs.

# Assumptions for Cumulative Impact Table

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- ❑ One \$50 million transmission project
- ❑ Service life = 50 years
- ❑ Net salvage = 100% of original plant
  - Therefore, Revenue Requirement impact = \$1 million/year for salvage
- ❑ Net-to-Gross Multiplier for depreciation is offset by Tax Depreciation. Multiplier only for franchise and uncollectables.
- ❑ Interest rate ( $i$ ) = 5%
- ❑ Rate of Return = 11.5%
- ❑ Net-to-Gross multiplier for Rate base = 1.8
- ❑ Present Worth =  $F[1/(1+i)^n]$

# Impact of Tenuous Relationship between Net Salvage and Rate base

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- ❑ Ratepayers do not receive the full benefit of this policy of paying in inflated dollars until the future, in this example, year 10.
- ❑ Utilities, on the other hand, are able to invest and gain returns on net salvage dollars immediately. This may create a perverse incentive for utilities to collect higher net salvage in order to inject these dollars into utility cash flows, along with depreciation dollars (For private companies, depreciation dollars are taken from investment returns. For utilities, these dollars are provided by ratepayers separately from investment returns).

# Tenuous Net Salvage and Rate Base connection

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- ❑ Net salvage is not an original investment, so why should it be taken out of rate base?
- ❑ For a given a utility with a single unit of original plant, rate base will be reduced to zero before that asset is retired.

MGB1

**Slide 15**

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**MGB1**

question for Larry. Don't know if 'equity adder' is the right term for this concept.

Manisha Gangopadhyay, 10/31/2008

# Over-collection due to inflation

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- Historical Ratios upon which future net salvage is projected, have inflation embedded into them, requiring ratepayers to pay more for future net salvage costs. The denominator is an inflated value.
  - Ex: Original Plant: Net Salvage  
(\$1000, year 0): (\$2500, year 50)
- Assuming the inflation rate to be constant at 3%: If utility collected net salvage dollars retained their value over the 50 years of collection, the total dollars required to be collected from ratepayers is **\$1303**.
- The following table illustrates how much value is lost when a future net salvage of \$2500 is distributed evenly across 50 years in nominal, rather than real, dollars.

Year	Real Dollar Value of \$2500 from year 50	What the Real Value of \$50 in Year 50 is worth in the preceding years	How much utility is over-collecting	Year	Real Dollar Value of \$2500 from year 50	What the Real Value of \$50 in Year 50 is worth in the preceding years	How much utility is over-collecting
year 50	\$2,500.00	\$50.00	<b>\$0.00</b>	year 25	\$1,167.44	\$23.35	<b>\$26.65</b>
year 49	\$2,425.00	\$48.50	<b>\$1.50</b>	year 24	\$1,132.41	\$22.65	<b>\$27.35</b>
year 48	\$2,352.25	\$47.05	<b>\$2.96</b>	year 23	\$1,098.44	\$21.97	<b>\$28.03</b>
year 47	\$2,281.68	\$45.63	<b>\$4.37</b>	year 22	\$1,065.49	\$21.31	<b>\$28.69</b>
year 46	\$2,213.23	\$44.26	<b>\$5.74</b>	year 21	\$1,033.52	\$20.67	<b>\$29.33</b>
year 45	\$2,146.84	\$42.94	<b>\$7.06</b>	year 20	\$1,002.52	\$20.05	<b>\$29.95</b>
year 44	\$2,082.43	\$41.65	<b>\$8.35</b>	year 19	\$972.44	\$19.45	<b>\$30.55</b>
year 43	\$2,019.96	\$40.40	<b>\$9.60</b>	year 18	\$943.27	\$18.87	<b>\$31.13</b>
year 42	\$1,959.36	\$39.19	<b>\$10.81</b>	year 17	\$914.97	\$18.30	<b>\$31.70</b>
year 41	\$1,900.58	\$38.01	<b>\$11.99</b>	year 16	\$887.52	\$17.75	<b>\$32.25</b>
year 40	\$1,843.56	\$36.87	<b>\$13.13</b>	year 15	\$860.90	\$17.22	<b>\$32.78</b>
year 39	\$1,788.25	\$35.77	<b>\$14.23</b>	year 14	\$835.07	\$16.70	<b>\$33.30</b>
year 38	\$1,734.61	\$34.69	<b>\$15.31</b>	year 13	\$810.02	\$16.20	<b>\$33.80</b>
year 37	\$1,682.57	\$33.65	<b>\$16.35</b>	year 12	\$785.72	\$15.71	<b>\$34.29</b>
year 36	\$1,632.09	\$32.64	<b>\$17.36</b>	year 11	\$762.15	\$15.24	<b>\$34.76</b>
year 35	\$1,583.13	\$31.66	<b>\$18.34</b>	year 10	\$739.28	\$14.79	<b>\$35.21</b>
year 34	\$1,535.63	\$30.71	<b>\$19.29</b>	year 9	\$717.10	\$14.34	<b>\$35.66</b>
year 33	\$1,489.57	\$29.79	<b>\$20.21</b>	year 8	\$695.59	\$13.91	<b>\$36.09</b>
year 32	\$1,444.88	\$28.90	<b>\$21.10</b>	year 7	\$674.72	\$13.49	<b>\$36.51</b>
year 31	\$1,401.53	\$28.03	<b>\$21.97</b>	year 6	\$654.48	\$13.09	<b>\$36.91</b>
year 30	\$1,359.49	\$27.19	<b>\$22.81</b>	year 5	\$634.85	\$12.70	<b>\$37.30</b>
year 29	\$1,318.70	\$26.37	<b>\$23.63</b>	year 4	\$615.80	\$12.32	<b>\$37.68</b>
year 28	\$1,279.14	\$25.58	<b>\$24.42</b>	year 3	\$597.33	\$11.95	<b>\$38.05</b>
year 27	\$1,240.77	\$24.82	<b>\$25.18</b>	year 2	\$579.41	\$11.59	<b>\$38.41</b>
year 26	\$1,203.54	\$24.07	<b>\$25.93</b>	year 1	\$562.02	\$11.24	<b>\$38.76</b>

<b>Total Over-collection:</b>	<b>\$1,196.78</b>
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## Over-collection offset by Rate of Return

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- Utilities over-collect more in early years. At the same time, early-year ratepayers are not receiving the full rate of return benefits from a net-salvage-reduced rate base until later years.
- This temporal incongruence may be perceived as unfair to early-year ratepayers.

# Alternatives to Current Policy

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1. Improved Estimates under Current Policy
2. Pay-as-you-go
3. Lockbox
4. Hybrid A
  - (1)+ (2)
5. Hybrid B
  - (1+3) + (2)

# Improved Estimates Under Prevailing Policy

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- Conduct Engineering studies that:
  - Evaluate Retirement Cost Benefits from new Environmental Technologies and Increasing Salvage Values (*e.g.*: 3M conductors)
  - Evaluate Economies of Scale of Aging Equipment (will shrink original cost/net salvage ratio)
  - Examine the volume and temporal aspects of possible mass retirements of current equipment for utility planning for net salvage reserve purposes

# “Pay-as-you-Go” Alternative

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- ❑ Expense Net Salvage as it occurs
- ❑ Ratepayers are only charged a known cost rather than estimates based on uncertain variables.
- ❑ Practiced in Pennsylvania, this has been advocated for years by a small number of vocal ratepayer advocates, including the depreciation professionals at the Pennsylvania Public Utility Commission.
- ❑ Expenses are based on previous 5-year net salvage averages, to normalize cost impacts on ratepayers.

# “Lockbox” Alternative

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- ❑ Would require public utilities to place collected net salvage in an interest-bearing account, such that:
  - Dollars collected retain their value over time
  - These dollars will be available at retirement (when net salvage cost is incurred)
- ❑ Similar to an Nuclear Decommissioning Trust Fund (NDTF), except not a Fund.
- ❑ Will require a federal IRS/FERC effort to overcome tax law obstacles, as in NDTF.
- ❑ Improved estimates for projecting net salvage costs will yield greater benefits from this alternative.

# Hybrid A Alternative

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- **½ Current Policy** (with improved estimates) + **½ Pay-as-You-Go\***
  - half of estimated future NNS would be paid for through the amortized process; the other half will be paid for at the time it is incurred.

# Hybrid B Alternative

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- **½ Lock-box (with improved estimates) + ½ Pay-as-You-Go**
  - half of estimated future NNS would be collected into an interest bearing lockbox account through the amortized process; the other half will be paid for at the time it is incurred.

\*Improvement on estimates required only where estimates are made (thus this is not necessary for Pay-As-You-Go policy).

# How do alternatives compare in meeting net salvage goals?

	(1) Equitably distribute costs to ratepayers over time, while minimizing these costs to the extent possible			(2) Ensure accountability	(3) Ensure NNS Fund Availability	(4) Minimize Perverse Incentives
	Match NNS Charged with NNS Incurred	Either Inflation Offsets or Rate base Benefits	Inter-generational Equity	Avoidance of "Double Dipping" as a result of poor management /planning on collected NNS funds.	Assurance on Availability of Necessary NNS Funds	Prevention of Accelerated Rate base erosion that may incent unnecessary investment
<b>Current Policy</b>		✓	✓			
<b>Pay-As-You Go</b>	✓			✓		✓
<b>Lockbox</b>		✓	✓	✓	✓	✓
<b>Hybrid A</b>	1/2	1/2	1/2	1/2		1/2
<b>Hybrid B</b>	1/2	1/2	1/2	✓	1/2	✓ <sub>25</sub>

# Conclusions

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- ❑ Additional technical analysis may yield sufficient improvements to current policy.
- ❑ We cannot properly evaluate the economic benefits of the alternatives and the existing policy without quantifying ratepayer discount rates and interest rates for a lockbox account in order to compare them with rate of return benefits of the current policy.
- ❑ However, a hybrid-lockbox or lockbox approach would enable better tracking (accountability) of collected dollars and ensure, to a larger extent, the availability of NS funds when they are needed.

# Recommendations

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- Weigh the current policy's troublesome implications against its long-term benefits to ratepayers.
- Further research quantifying the benefits of alternatives (*i.e.*, comparing customer's discount rate with lockbox interest rate and current policy's rate of return benefits) will enable more informed policy decisions for the long-term best interest of ratepayers.
- This evaluation should include the costs/benefits of the current net salvage policy's accounting complexity (*i.e.*, tracking net salvage dollars).

# Next Steps

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- ❑ Produce Technical Paper and circulate among all State Commissions
- ❑ Seek collaborative input from Public Utility Commissions
- ❑ Initiate further study with National Regulatory Research Institute (NRRI) and academic community
- ❑ Develop policy recommendations for consideration by state commissions based on collaborative input and studies

# Obstacles to Next Steps

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## □ 1) Lack of Expertise and Staff

- The course of this study revealed that there are a declining number of depreciation experts across state commissions who can constructively weigh in on this research.

## □ 2) Competing Priorities.

- Green energy, energy efficiency and greenhouse gas reduction programs are receiving increasing priority among public utility commissions, including the CPUC.

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