

June 17, 2011

TO: Membership of the Society of Depreciation Professionals
FROM: John Ferguson, Current Issues Editor

The purpose of the Current Issues letters is to inform the Society membership on depreciation related issues. The views expressed in the letters are the views of the authors and do not reflect any formal position of the Society. The Society hopes that these letters will prompt discussion among members and lead to an increased understanding of the issues facing our members. All members are encouraged to submit their ideas and comments for consideration in a future letter. Comments should be addressed to John Ferguson (johnferg@swbell.net). The letters are distributed to members via email and each is posted on the SDP web site (www.depr.org). All prior Current Issues letters are posted on the members-only section of the Society web site. Therefore, any prior letter mentioned by this letter is available to members.

The Future of Coal-Fired Generation in the U.S.

The August 11, 2010 Current Issues letter (page 3) notes a report of ICF International concerning retirements of coal-fired capacity expected to be prompted by pollution control expenditures that cannot be justified. The March 25, 2011 letter (pages 1 and 2) notes a study of The Brattle Group that estimates up to about 20% of today's coal-fired generation will retire or be "at risk" by 2020, and discusses the editor-in-chief of Power as taking exception to these predictions in its February 2011 issue. However, in the May 2011 issue of Power, the editor-in-chief relies on Burns & McDonnell data to suggest that a loss of 50 GW (15%) of capacity during the next decade is a reasonable prediction and that this is consistent with the ICF and Brattle predictions of 53 GW and of 50 - 65 GW, respectively.

The May 2011 Power states that the Burns & McDonnell data show 1,105 coal units, 846 of which do not have selective catalytic reduction units (SCRs), 619 do not have flue gas scrubbers, and 578 do not have either SCRs or scrubbers, and that it is reasonable to conclude that some of these 578 units without air quality control systems are candidates for retirement. These 578 units are older (average vintage 1962 versus 1979) and operate less (average capacity factor 57% versus 67%) than units with both SCRs and scrubbers. Power identifies 305 coal units for which the capacity factors are 60% or less and the total nameplate rating is 48.2 GW (14.1% of the total coal capacity), and asserts there is sufficient surplus gas-fired generation to compensate for the energy lost from retirement of these coal units.

Comment: The May 2011 Power includes a bar graph of average capacity factor versus age of coal units in five-year increments that shows a gradual decrease to 54.9% at an age of 60 years and then a sharp drop to 31.8% at an age of 65 years and lower at higher ages. This graph suggests a distinctive lifecycle for coal units that, if real, could have depreciation accounting implications that are addressed by the next section of this Current Issues letter.

Implications of a Distinctive Lifecycle for the Depreciation Accounting of Power Plants – Comment

The implications of a distinctive lifecycle for depreciation accounting are a consequence of U.S. GAAP and the FERC electric Uniform System of Accounts (USoA) requiring that depreciation accounting be both *systematic and rational*, because *rational* means that the recording of depreciation is to match the pattern of asset usage or revenue-generating capability. This GAAP requirement has been in existence for nearly 60 years, and the FERC requirement began in 2000 when General Instruction 22 was added to the electric USoA. General Instruction 22, what prompted it, and why the FERC gas USoA does not contain an equivalent will be addressed by a future Current Issues letter.

The pattern of usage of a generating unit is evident from its annual capacity factors. Therefore, if this pattern is distinctive, as might be interpreted from the graph of capacity factors versus age in the May 2011 issue of Power mentioned in the prior section of this Current Issues letter, the pattern of recording depreciation should be similar, which can be accomplished through use of the Units-of-Production procedure or through a pattern of depreciation rates that approximates the usage pattern.

The important question is whether a distinctive pattern of usage actually exists. I have observed that this pattern does exist for steam generating units, and it is demonstrated by J. C. Egg in his September 11, 1975 Public Utilities Fortnightly article, *Economic Life Span of Power Production Units*. Steam units are typically operated to provide baseload service until prevented from continuing to do so by the deterioration that accumulates through use. The possible reactions to this situation are retirement, change in mode of operation, refurbishment, or repowering through boiler replacement. While retirements have sometimes occurred, until about 20 years ago the most common reaction to this deterioration was to extend the operating life span by changing the mode of operation from baseload to standby or peaking duty. More recently, the most common reaction has been life extension through refurbishment.

While the distinctive lifecycle suggested by the previously mentioned graph of capacity factors versus age may turn out to be valid, I doubt that the refurbishment option has been popular for long enough to be depicted by the Power graph. I retired prior to learning whether refurbished units will experience further life extensions through changing their mode of operation, and would appreciate hearing from anyone having such knowledge, as Society members may be interested.

Whether the lifecycle is distinctive or not, being *rational* means that the recording of depreciation is to be consistent with usage. If the pattern of usage is relatively constant and future capital expenditures will be made for periodic replacements of unit components, the depreciation rate should be constant over the entire life span of the generating unit. Reflecting in depreciation rates an estimated retirement date that can be reached only through making future capital expenditures, but not reflecting these expenditures in the rates until after they are recorded, which is commonly dictated by regulators, results in the rates increasing at each recalculation, which is inconsistent with usage. A similar inconsistency occurs when units have a distinctive lifecycle that is not

allowed to be reflected in depreciation rates. The mismatches with usage cause these practices to be in conflict with both GAAP and the FERC electric USoA.

It is not difficult to determine power plant depreciation rates that are consistent with the GAAP and USoA requirements that depreciation be *rational*, but how to do so is beyond the scope of this discussion.

Substance Over Form

As is noted by the comments in the March 25, 2011 Current Issues letter concerning the response of Mike Majoros to the discussion of his October 2010 Public Utilities Fortnightly article, *Main Street Gold Mine*, in the December 15, 2010 letter, I have not heard of the accounting concept – substance over form – that Mr. Majoros cited when I requested a citation for something he attributed to me. The March 25 letter asked anyone familiar with this concept to provide an explanation, and Canadian Society member Frank D’Andrea responded with the following. His FASB reference is to the Basis of Conclusions section of Concepts Statement 8, Conceptual Framework for Financial Reporting.

On substance over form, this is from FASB Statement No. 8, BC3.26 *Substance over form is not considered a separate component of faithful representation because it would be redundant. Faithful representation means that financial information represents the substance of an economic phenomenon rather than merely representing its legal form. Representing a legal form that differs from the economic substance of the underlying economic phenomenon could not result in a faithful representation.* (the concept of substance over form is in Canadian GAAP and IFRS also).

Effectively, *Substance over form* is the concept that the information shown in the financial statements and accompanying disclosures of a business should reflect the underlying realities of accounting transactions, rather than the legal form in which they appear. The key point of the concept is that a transaction should not be recorded in such a manner as to hide the true intent of the transaction. Substance over form is a particular concern under Generally Accepted Accounting Principles (GAAP), since GAAP is largely rules-based, and so creates specific hurdles that must be achieved in order to record a transaction in a certain way. Thus, someone intent on hiding the true intent of a transaction could structure it to just barely meet GAAP rules, which would allow that person to record the transaction in a manner that hides its true intent. Conversely, International Financial Reporting Standards (IFRS) are more principles-based, so it is more difficult for someone to justifiably hide the intent of a transaction if they are using the IFRS framework. Thus far, the substance over form argument assumes that someone is attempting to deliberately hide the true intent of a transaction - but it may also arise simply because a transaction is extremely complex, which makes it quite difficult to ascertain what the substance of the transaction is - even for a law-abiding accountant.

Comment: Now that I understand the concept, I fail to understand how *substance over form* can explain a citation to something that does not exist.

Yucca Mountain Nuclear Waste Disposal Project

A recent report of the Government Accountability Office, Nuclear Waste: Disposal Challenges and Lessons Learned from Yucca Mountain, is intended to uncover where the Yucca Mountain project stands, where the nation's nuclear waste disposal policy is headed, and what can be learned from previous waste management efforts. The report concludes that uncertainties exist about the direction of the nation's disposal policy, and faults the Department of Energy (DOE) for failing to cite technical and safety issues when it ended the Yucca Mountain project, stating "there is no guarantee that a more acceptable or less costly alternative will be identified." The report also states that most of the organizations interviewed by the DOE believe that overcoming social and political opposition to a repository and having consistent policy, funding, and leadership in place are needed to develop a future waste management strategy, and recommends further exploration of the risks that project termination could pose for future radioactive materials management and development of a plan to restart the project in case the DOE is required to do so.

The DOE's response asserts that the conclusions of the report are based on mistaken assumptions that the Yucca Mountain repository would have opened in the first place and that any alternative would take longer to implement and increase spent fuel storage costs.

Abandonment of Nuclear Power in Germany

The German government has reacted to the situation in Japan by announcing an intention to abandon nuclear generation through (at least in part) increased investment in wind and solar resources, with eight of Germany's 17 reactors to be shut down now and the remainder by 2022. Of the eight units to be shut down now, seven are currently down temporarily in response to the accident in Japan and one is currently down for maintenance. Nuclear currently provides 13% of Germany's electric capacity and 23% of its electric energy. Replacing this loss of capacity would require doubling the amount of fossil-fueled generation expected to be needed during the next ten years, which the International Energy Agency says would add about 25 million metric tons to Germany's annual carbon-dioxide emissions. German businesses are expressing concern for potential power shortages and the detrimental effect of higher cost energy on their competitive position in the world marketplace, and two of the nuclear unit owners are threatening to sue for recovery of the revenues that would be lost due to early closure.

Comment: Wind and solar cannot directly substitute for nuclear, because their power output is variable and they operate at low capacity factors. These characteristics require voltage support and frequency management to prevent variability from adversely affecting power system reliability and stability, and require backup for when the wind doesn't blow or the sun doesn't shine. Some of the backup can be through increased operation of existing coal-, gas-, and oil-fired units, but most would be from new units that fuel efficiency, the potential for exploitation of European shale

resources, and the recently discovered natural gas fields in the Eastern Mediterranean suggest are likely to be gas-fired combined-cycle. The variable operation of wind and solar transfers to the backup facilities, thereby causing cycling duty that decreases the lives of components, and the redundant capacity and increased operation of fossil-fired generation demonstrate that abandoning nuclear increases both costs and emissions. An interesting aspect of integration of wind and solar resources is that the extent of the cycling duty (and damage) of the backup facilities can be reduced through curtailment of wind and solar output.

Germany's intent to rely more extensively on renewable resources is occurring at the same time several other European countries are deemphasizing such resources through decreasing subsidies. The decision for abandonment by 2022 is actually a repeat of a decision made in 2000 by a prior German government to abandon nuclear generation by 2022. Late last year, the current government altered the prior decision by agreeing to allow the nuclear units to operate for an additional 12 years beyond 2022.

Comment: It will be interesting to see whether the detrimental impact of abandonment of nuclear generation on Germany's environment and economy is sufficient to cause the current abandonment decision to be altered, as was the prior decision.

Michigan Case No. U-16054 of Consumers Energy Company

This proceeding and a companion proceeding (Case No. U-16055) covering a jointly owned pumped-storage hydraulic station were not scheduled to be the final depreciation proceedings directed by the Order in Case No. U-14292, which was a generic proceeding concerning adoption of SFAS 143, Accounting for Asset Retirement Obligations, and the treatment of cost of removal not qualifying for SFAS 143. However, they were delayed at the request of Consumers until after the decision in a prior proceeding involving Consumers' gas property, in order to avoid unnecessary litigation and controversy. This discussion relies on the direct testimony of Consumers, the Staff, and the Association of Businesses Advocating Tariff Equity (ABATE), the rebuttal testimony of Consumers and ABATE, and a settlement proposed by Consumers, the Staff, ABATE, and the Attorney General (AG).

The Staff and intervener testimony have not yet been filed in the companion proceeding involving the pumped-storage station, and this proceeding will be addressed by a future Current Issues letter once all testimony has been filed.

Case No. U-14292 is addressed by several prior Current Issues letters, the most recent being that of July 23, 2007 (pages 2 - 4) on the second Order in the proceeding that directed the major jurisdictional energy utilities (two electric and four gas) to file new depreciation studies that address several specified alternative treatments for cost of removal. The Order granting the delay requested by Consumers was issued following the decision in the first proceeding resulting from Case No. U-14292 and directed Consumers to address only the traditional method, whereby salvage and cost of removal are recorded ratably over the life of the associated property. However, ABATE proposes the SFAS

143 form of net salvage deferral in this proceeding for Distribution and General Plant, but does not calculate depreciation rates reflecting this treatment. For the four proceedings resulting from Case No. U-14292 that were filed prior to Case No. U-16117 of Detroit Edison (all involving gas property), ABATE proposed forms of cash treatment for net salvage and the AG proposed SFAS 143 treatment. The AG did not file testimony in the Edison proceeding and does not do so in this Consumers proceeding either.

Consumers' depreciation study is as of December 31, 2008, involves Steam, Hydraulic, and Other Production, High Voltage Distribution, Distribution, and Electric and Common General Plant, and is described as being composed of four phases – Data Collection, Analysis, Evaluation, and Calculation. The concept known as General Plant Amortization is requested for all but three of the General Plant property groups (Land Rights, Structures and Improvements, and Power Operated Equipment), and all parties propose average life group remaining life rates – from which the following composite depreciation rates are determined:

	<u>Existing</u>	<u>Consumers</u>	<u>Staff</u>	<u>ABATE(a)</u>	<u>Settlement</u>
	%	%	%	%	%
Steam Production	2.84	3.83	3.36	3.75	3.68
Hydraulic Production	3.33	45.18	32.80	4.14	17.95
Other Production	1.84	3.69	3.76	2.92	3.65
HV Distribution	2.28	2.53	2.53		2.53
Distribution	3.14	3.04	3.04		3.09
Electric General	8.36	4.66	4.65		4.66
Common General	10.97	5.65	5.64		5.65
Total	3.27	3.75	3.51		3.50

- (a) ABATE proposes the SFAS 143 form of net salvage deferral for Distribution and General Plant, but does not calculate proposed rates, and the rates shown for Production Plant do not reflect net salvage changes made by Consumers in rebuttal testimony.

Comment: The March 23, 2005 Current Issues letter (pages 12 - 14) addresses the concept that has become known as General Plant Amortization, including the need, background, and alternative approaches for implementation.

The property classified as High Voltage Distribution is the Transmission Plant that remained after electric industry restructuring that resulted in the property performing the Michigan transmission function being sold to another entity. Hydraulic Production is comprised of only conventional stations. Consumers jointly owns a pumped storage station with Detroit Edison that is covered by a separate proceeding (Case No. U-16055). The proposed depreciation rates are calculated after reallocating the book reserves within each functional property group.

Comment: Reserve reallocation mitigates the depreciation rate volatility that would otherwise occur from past or expected activity being different from the bases of the existing rates, is a must when a composite rate has

been applied to more than one depreciable property group, and is not meaningful when whole life rates are proposed.

The depreciation increase proposed by Consumers for steam units is stated to be driven by environmental expenditures not reflected in the existing depreciation rates, for hydraulic units by recognition of terminal removal costs, and for combustion turbine units by a new station having the shortest life span (28 years) and comprising nearly 90% of the depreciable investment. The proposed changes for High Voltage Distribution and Distribution are due to average service lives generally increasing and net salvage factors generally decreasing (becoming less positive or more negative), which have opposite impacts on depreciation rates. Distribution has more impact on ratepayers than does High Voltage Distribution, because the depreciable Distribution investment is more than seven times the High Voltage Distribution investment. The depreciable lives for some of the Electric General Plant property groups proposed to be amortized are different from those for the Common General Plant, and positive net salvage factors are proposed for the Computer Equipment and Stores Equipment of Electric General Plant, and for the Office Furniture and Equipment and Tools, Shop and Garage Equipment of Common General Plant.

Comment: The depreciation rates for hydraulic stations would have an interesting impact on local property tax assessments that are based on net book value, because the net book value of these stations would become negative in less than two years with the rates proposed by Consumers, in just over two years with the rates proposed by the Staff, and in less than four years with the settlement rates. This situation would also have an interesting impact on cost of service, because the credit for ratepayer-supplied capital provided by the accumulated provision for depreciation being a negative component of rate base would become large enough for the return component to be negative.

The life span approach is applied to generating stations, whereby interim retirement curves are truncated at the estimated retirement date of each unit or station, and both interim and terminal net salvage are recognized. The retirement dates are estimated by Consumers for steam and combustion turbine (Other Production) stations, and are the termination dates of the existing project licenses for the hydraulic stations. The life spans for steam units vary from 53 to 76 years and for combustion turbine units vary from 28 to 49 years. The interim net salvage factors are determined from past experience. The terminal net salvage is from site-specific demolition estimates that reflect the estimated price level at the time of retirement. The demolition estimates for eleven of the thirteen hydraulic stations are updated from estimates made by a consultant for their FERC relicensing proceedings, and for the other two stations are derived by Consumers from the estimate for one of the relicensed stations. The estimates for the relicensing proceedings included three disposition scenarios, and Consumers adopted the complete removal scenario as being most likely for all of the stations.

Consumers excluded the future interim addition amounts for generating stations from the study, stating:

The estimated amount of future additions might or might not occur. However, there is not uncertainty as to whether the full level of interim retirements will happen.

Comment: Consumers has retired units at one of its existing steam stations and has retired both steam and hydraulic stations, which, presumably, were eliminated from the data utilized to determine the Iowa-type interim retirement curves. If the past interim additions are included in the data utilized to determine the interim retirement curves, which I think is likely, these curves would be more accurately described as “interim addition and retirement” curves. Not recognizing expenditures for future interim additions until after they have been recorded is inconsistent with using interim retirement curves that recognize that interim retirements are typically replaced and that interim additions sometimes occur that are not replacements. Leaving out future additions that do not extend life is a deferral mechanism that causes depreciation rates to increase at each recalculation. Interim addition amounts are larger than interim retirement amounts, so have more influence on depreciation rates than do interim retirements. This influence is demonstrated by the November 19, 2007 Current Issues letter (pages 6 - 10), utilizing data of another Michigan utility.

The fact that 60% of Consumers’ steam investment is for units that are old enough to likely have already had their lives extended through large expenditures for refurbishment or complying with environmental regulations will limit the impact of this deferral on future ratepayers somewhat.

Steam units typically exhibit a pattern of usage that is relatively constant or decreasing, and hydraulic and combustion turbine units typically exhibit patterns that are relatively constant. Therefore, a pattern of depreciation rates that is increasing due to delaying the recognition of expenditures for interim additions until after being recorded would be inconsistent with the requirements of U.S. GAAP and General Instruction 22 of the FERC electric Uniform System of Accounts that depreciation be “rational.”

Consumers previously recognized the retirement dispersion for generating stations through interim addition and retirement ratios, with the additions being in relation to the annual retirement amounts and the retirements being in relation to the annual beginning plant balance amounts. The tabulation below shows the interim survivor curves adopted by the parties in the current proceeding and the addition and retirement ratios proposed by Consumers in its 1993 Case No. U-10754:

	<u>Curves</u>	<u>Addns.</u>	<u>Retmts.</u>
Steam Production Plant			

310, Land Rights		0.0	0.0000
311, Structures	90 R2.5	4.0	0.0008
312, Boiler Plant	60 R1.5	4.0	0.0040
314, Turbogenerator Units	60 R0.5	1.0	0.0020
315, Accessory Electric	60 L1.5	5.5	0.0012
316, Miscellaneous	40 L0	5.0	0.0100
Hydraulic Production Plant			
330, Land Rights		0.0	0.0000
331, Structures	125 R1.5	12.0	0.0005
332, Dams	95 L54	15.0	0.0002
333, Turbines	80 R3	8.0	0.0025
334, Accessory Electric	60 R1.5	4.5	0.0040
335, Miscellaneous	40 L0	5.0	0.0060
336, Roads and Trails		0.0	0.0000

How to utilize survivor curves for determining depreciation rates for power plants is a complex subject that is addressed by the February 10, 2010 Current Issues letter (pages 7 - 11) and more extensively by my presentation at the Society's 2010 Annual Meeting.

The above survivor curves reflect differences between and among functional property groups, whereas the parties involved in the immediately prior Detroit Edison proceeding (Case No. U-16117) adopted the same interim curve (200 SC) for each steam and nuclear property group. The Consumers curves obviously reflect variations in interim retirements among the property groups. Not so obvious is that these curves would also reflect variations in interim additions among the groups, if past interim additions were not eliminated from the database from which the interim curves were determined.

The above interim retirement ratios are based on the presumption that future interim additions would occur, and would have been larger if interim additions were presumed to not continue or were not to be reflected in the calculation of depreciation rates. When interim additions are presumed to not continue or are not to be reflected in the calculation of depreciation rates, past interim additions should be excluded when determining interim survivor curves, which would have the effect of decreasing the resulting average service lives.

The survivor curves selected by Consumers for Distribution Plant and the General Plant property groups not being amortized are shown to be based on life analyses reflecting retirement experience bands ranging from the last 20 years to the last 51 years, and the net salvage analyses are shown to be for 2-, 3-, 4- and 5-year rolling experience bands for the last 15 years for generating stations and for the last 25 years for the other property.

The Staff adopts Consumers' lives and retirement dispersion patterns, with the exception of four Distribution Plant property groups, and supports General Plant Amortization and the traditional method for treating salvage and cost of removal. The most significant net salvage changes of the Staff include elimination or modification of certain contingencies, elimination of a burden for administrative costs, and addition of scrap values for Steam, Hydraulic, and Other Production; reduction in the costs for removing asbestos and closing ash ponds, and elimination of the cost for filling intake and discharge canals for Steam; and reduction in the cost for riprap protection for Hydraulic.

For the 42 Distribution and General Plant property groups, the Staff increases Consumers' average service life for one group, the degree of dispersion for three groups, and the net salvage factors (more positive or less negative) for six groups.

These changes prompt the Staff to re-allocate the book reserves.

ABATE's direct testimony faults Consumers for:

- Adopting a life span for one of its Other Production stations that is too short;
- Not reflecting the values of scrap materials and of the generating station sites in its station demolition cost estimates;
- Including contingencies in its generating station demolition cost estimates;
- Using a generating station demolition cost escalation rate that is too high;
- Not assuming that FERC hydro project licenses will be extended;
- Assuming that dams will be removed; and,
- Adopting the traditional method for treating net salvage.

ABATE proposes:

- A 50% decrease in the steam station demolition costs to compensate for Consumers not reflecting the values of scrap materials and station sites, including contingencies, and using a cost escalation rate that is too high;
- Reflecting only non-power operation hydro demolition costs, which means dams and equipment would not be removed;
- Increasing the life span for an Other Production station from 28 years to 35 years and not increasing the demolition cost accordingly in order to reflect the value of the sites; and,
- Use of the SFAS 143 form of net salvage deferral for property groups other than Production Plant.

In rebuttal testimony, Consumers agrees with the premise of scrap value for generating stations, but not with the amounts proposed by the Staff, accepts a lower demolition cost contingency, rejects most of the Staff's other changes to the station demolition costs, and accepts some of the Staff's proposed changes for Distribution and General Plant. The

Consumers portion of the above tabulation of composite functional and total depreciation rates reflects the rates proposed in rebuttal testimony, which have the effect of decreasing the composite total rate from initially being 3.85% to the rate of 3.75% shown by the tabulation.

Consumers' rebuttal testimony rejects all of the changes proposed by ABATE, and supports the option for removal of the dams by asserting that the FERC is likely to require full removal.

ABATE's rebuttal testimony faults the Staff for not recognizing the value of generating station sites, proposes that the Staff's 10% contingency be eliminated to recognize the value of steam station sites, and recommends that the Commission not accept the hydro demolition cost estimates of Consumers or the Staff until determining which of the three demolition options is most beneficial to ratepayers.

The settlement proposed by the parties does not disclose anything other than the depreciation rate for each depreciable property group and that Consumers can adopt the General Plant Amortization concept for the requested property groups.