

Black Start Issues

Operating Committee
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IMM



Monitoring Analytics

Black Start Issues

- **CRF: capital recovery factor**
 - **A rate, multiplied by the investment, which provides for a return on and of capital over a defined time period**
 - **CRFs are calculated using a standard financial model that accounts for the weighted average cost of capital and its components, including depreciation and taxes.**
 - **For example, a five year CRF will allow the recovery of 100 percent of the investment plus a return over five years.**

CRF History

- **The CRF table was created in 2007 as part of the new RPM capacity market design**
 - **The CRF table provided for the accelerated return of incremental investment in capacity resources based on concerns about the fact that some old units would be making substantial investments related to pollution control.**
 - **The same CRF table was used in the black start rules.**

CRF Issues

- **The CRF table includes assumptions that are no longer correct. The CRF values are significantly too high.**
 - **Tax depreciation rules reduce taxes**
 - **Corporate tax rate lower**
- **Need two CRF tables:**
 - **CRF for full application of 2017 tax law**
 - **CRF for application of corporate tax rate under 2017 tax law**

Original CRF Table

- Original CRF table created in 2007

Age of Black Start Unit	Term of Black Start Commitment	Levelized CRF
1 to 5	20	0.125
6 to 10	15	0.146
11 to 15	10	0.198
16+	5	0.363

Revised CRF Table 1

- Original CRF table with CRF values based on 2017 tax code: post 2017 units.

Age of Black Start Unit	Term of Black Start Unit Commitment	Levelized CRF
1 to 5	20	0.085
6 to 10	15	0.101
11 to 15	10	0.134
16+	5	0.235

Revised CRF Table 2

Original CRF table with CRF values based on 2017 tax code: pre 2017 units.

Age of Black Start Unit	Term of Black Start Unit Commitment	Levelized CRF
1 to 5	20	0.119
6 to 10	15	0.136
11 to 15	10	0.179
16+	5	0.313

CRF Issues

- **CRF table column header: “Term of black start commitment”**
 - **This is misleading and incorrect**
 - **The column is simply the cost recovery period**

Term of Black Start Commitment

- **No need for current short recovery periods for black start investments. Based on RPM.**
- **Accelerated recovery reduces risk to black start units and should not be the basis for a shorter commitment.**
- **Two periods, based on unit age, are more than adequate. The two periods still reflect accelerated recovery.**
- **Full payment of all costs of black start investment should require commitment for life of unit.**
- **Without such commitment, customers pay full price multiple times for the same service.**

IMM Proposed CRF Table 1

Two age categories. CRF values based on 2017 tax code:
post 2017 units.

Age of Black Start Unit	Black Start Cost Recovery Period	Levelized CRF
1 to 10	20	0.085
11 Plus	10	0.134

IMM Proposed CRF Table 2

Original CRF table with CRF values based on 2017 tax code:
pre 2017 units.

Age of Black Start Unit	Term of Black Start Unit Commitment	Levelized CRF
1 to 5	20	0.119
6 to 10	15	0.136
11 to 15	10	0.179
16+	5	0.313

CRF Implementation Issues

- **CRF values have overcompensated all black start units following changes to the tax code in 2017.**
 - **Depreciation rules allow more accelerated depreciation.**
 - **Reduced corporate tax rate to 21 percent.**
- **Black start units going into service currently are being overcompensated**
 - **The new CRF rates should apply to all units going into service following the changes in tax law in December 2017 and to which the changes apply.**
 - **There are eight plants with 20 black start units.**

CRF Implementation Issues

- **Black start units in service prior to the tax law changes are also being overcompensated**
 - **The new CRF rates that include the change in the corporate tax rate should apply to all units with a CRF.**
 - **Units did not invest with the expectation of this windfall.**
 - **There are 21 plants with 29 black start units.**

CRF Implementation Issues

- **Overcompensation amounts vary with the project investment and the CRF recovery period.**
- **For a post 2017 black start unit with an investment of \$21M to which the full tax law applied, the overcompensation for a 20 year recovery period is:**
 - **\$840,000 per year**
 - **\$16,800,000 over the recovery period**
- **For a post 2017 black start unit with an investment of \$21M to which the lower tax rate applies, the overcompensation for a 5 year recovery period is:**
 - **\$2,688,000 per year**
 - **\$13,440,000 over the recovery period**

Annual Difference: Full Tax Law

Example	Old CRF Rate	New CRF Rate	Project Investment	Old Annual Revenue Requirement	New Annual Revenue Requirement	Annual Difference
1	0.125	0.085	\$9,000,000	\$1,125,000	\$765,000	\$360,000
2	0.125	0.085	\$15,000,000	\$1,875,000	\$1,275,000	\$600,000
3	0.125	0.085	\$21,000,000	\$2,625,000	\$1,785,000	\$840,000
1	0.146	0.101	\$9,000,000	\$1,314,000	\$909,000	\$405,000
2	0.146	0.101	\$15,000,000	\$2,190,000	\$1,515,000	\$675,000
3	0.146	0.101	\$21,000,000	\$3,066,000	\$2,121,000	\$945,000
1	0.198	0.134	\$9,000,000	\$1,782,000	\$1,206,000	\$576,000
2	0.198	0.134	\$15,000,000	\$2,970,000	\$2,010,000	\$960,000
3	0.198	0.134	\$21,000,000	\$4,158,000	\$2,814,000	\$1,344,000
1	0.363	0.235	\$9,000,000	\$3,267,000	\$2,115,000	\$1,152,000
2	0.363	0.235	\$15,000,000	\$5,445,000	\$3,525,000	\$1,920,000
3	0.363	0.235	\$21,000,000	\$7,623,000	\$4,935,000	\$2,688,000



Lifetime Difference: Full Tax Law

Example	Old CRF Rate	New CRF Rate	Project Investment	Old CRF Lifetime Recovery	New CRF Lifetime Recovery	Lifetime Difference
1	0.125	0.085	\$9,000,000	\$22,500,000	\$15,300,000	\$7,200,000
2	0.125	0.085	\$15,000,000	\$37,500,000	\$25,500,000	\$12,000,000
3	0.125	0.085	\$21,000,000	\$52,500,000	\$35,700,000	\$16,800,000
1	0.146	0.101	\$9,000,000	\$19,710,000	\$13,635,000	\$6,075,000
2	0.146	0.101	\$15,000,000	\$32,850,000	\$22,725,000	\$10,125,000
3	0.146	0.101	\$21,000,000	\$45,990,000	\$31,815,000	\$14,175,000
1	0.198	0.134	\$9,000,000	\$17,820,000	\$12,060,000	\$5,760,000
2	0.198	0.134	\$15,000,000	\$29,700,000	\$20,100,000	\$9,600,000
3	0.198	0.134	\$21,000,000	\$41,580,000	\$28,140,000	\$13,440,000
1	0.363	0.235	\$9,000,000	\$16,335,000	\$10,575,000	\$5,760,000
2	0.363	0.235	\$15,000,000	\$27,225,000	\$17,625,000	\$9,600,000
3	0.363	0.235	\$21,000,000	\$38,115,000	\$24,675,000	\$13,440,000



Excess Recovery for Pre 2017 Units

Old Annual Revenue Requirement	New Annual Revenue Requirement	Annual Difference	Total Difference
\$53,281,144	\$47,528,292	\$5,752,852	\$30,764,964

Excess Recovery for Post 2017 Units

Old Annual Revenue Requirement	New Annual Revenue Requirement	Annual Difference	Total Difference
\$28,479,043	\$18,632,053	\$9,846,990	\$77,962,002

Total Excess Recovery

Existing Annual Revenue Requirement Total	New Annual Revenue Requirement Total	Total Annual Difference	Total Difference
\$81,760,187	\$66,160,345	\$15,599,842	\$108,726,965

CRF Substitution Issues

- **Substitution of a black start unit should be permitted only under very specific circumstances and with defined conditions**
- **A second unit at the same location, connected to the same bus.**
- **Review of costs of old and new units to ensure no overpayment**
 - **Cost reductions possible**

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