

# COST-BENEFIT ANALYSIS OF THE OPTIONS

Description

WORKSHEET 4

Do Min: DM3

Option: P3B

Year of Costs: 2006

| Project Options<br>Year Zero | Do Min 1<br>2006 | Do Min 2 | Do Min 3 | Option 1<br>2006 | Option 2<br>0 | Option 3<br>0 | Do Min | Option 1<br>(expected cost)             | Option 2<br>(reduced cost) | Option 3<br>(full cost) |
|------------------------------|------------------|----------|----------|------------------|---------------|---------------|--------|-----------------------------------------|----------------------------|-------------------------|
| COSTS:                       |                  |          |          |                  |               |               |        | Net Costs of the Project Options (\$)   |                            |                         |
| Capital Costs                | 164,691,610      |          |          |                  |               |               |        | 164,691,610                             | 0                          | 0                       |
| Maintenance Costs            | 0                |          |          |                  |               |               |        | 0                                       | 0                          | 0                       |
| Total Costs                  |                  |          |          |                  |               |               |        | 164,691,610                             | 0                          | 0                       |
| BENEFITS:                    |                  |          |          |                  |               |               |        | Net Benefits of the Project Options(\$) |                            |                         |
| Travel Time Costs            | 4,208,167,415    |          |          | 4,035,255,858    |               |               |        | 172,911,557                             | 0                          | 0                       |
| Vehicle Operating Costs      | 2,314,199,791    |          |          | 2,309,817,779    |               |               |        | 4,382,012                               | 0                          | 0                       |
| Accident Costs               | 800,142,106      |          |          | 777,987,337      |               |               |        | 22,154,769                              | 0                          | 0                       |
| Seal Ext/Passing Lane        | 0                |          |          | 0                |               |               |        | 0                                       | 0                          | 0                       |
| Carbon Dioxide               | 87,473,592       |          |          | 85,352,951       |               |               |        | 2,120,641                               | 0                          | 0                       |
| Tangible Benefits            |                  |          |          |                  |               |               |        | 201,568,979                             | 0                          | 0                       |
| Tangible B/C Ratio           | 7,409,982,904    |          |          | 7,208,413,925    |               |               |        | 1.22                                    | 0.00                       | 0.00                    |
| Intangible Benefits          |                  |          |          |                  |               |               |        |                                         |                            |                         |

## TRAVEL TIME COSTS

## WORKSHEET A4.1

| Period to Annual Conversion Factors |                 |               |
|-------------------------------------|-----------------|---------------|
| Model Period                        | periods per day | days per year |
| AMP                                 | 0.6571          | 365           |
| OFF                                 | 1.7838          | 365           |
| PMP                                 | 0.6756          | 365           |
|                                     |                 |               |
|                                     |                 |               |
|                                     |                 |               |
|                                     |                 |               |
|                                     |                 |               |
|                                     |                 |               |

Do Min: DM3  
 Option: P3B  
 Year of Costs: 2006

| Year | Time Period | Option | Link veh min | Intersection veh min | Total veh min | Travel time cost (\$) | TTime Cost per Year (\$) | Addn Congest time cost (\$) | Add Congest per Year(\$) | Total TT Cost per Year (\$) | Travel Time Benefit (\$) |
|------|-------------|--------|--------------|----------------------|---------------|-----------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|
| 2001 | AMP         | DOMIN  | 336761       | 57155                | 393916        | 150947                | 36,203,355               | 0                           | 0                        | 36,203,355                  |                          |
| 2001 | OFF         | DOMIN  | 926402       | 150776               | 1077178       | 412773                | 268,751,134              | 0                           | 0                        | 268,751,134                 |                          |
| 2001 | PMP         | DOMIN  | 403800       | 70075                | 473875        | 181588                | 44,778,511               | 0                           | 0                        | 44,778,511                  |                          |
|      |             |        | 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                        |                             | 0                        | 0                           |                          |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                             | 0                        | 0                           |                          |
| 2001 | AMP         | OPTION | 330107       | 54727                | 384834        | 147467                | 35,368,706               | 0                           | 0                        | 35,368,706                  | 834,648                  |
| 2001 | OFF         | OPTION | 901599       | 145821               | 1047420       | 401371                | 261,327,440              | 0                           | 0                        | 261,327,440                 | 7,423,694                |
| 2001 | PMP         | OPTION | 394307       | 67065                | 461372        | 176797                | 43,597,079               | 0                           | 0                        | 43,597,079                  | 1,181,432                |
|      |             |        | 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                        | 0                           | 0                        |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                             | 0                        | 0                           | 0                        |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                             | 0                        | 0                           | 0                        |
|      |             |        |              |                      |               |                       | 349,733,000              |                             |                          | 349,733,000                 |                          |
|      |             |        |              |                      |               |                       | 340,293,226              |                             |                          | 340,293,226                 | 9,439,774                |

| Year | Time Period | Option | Link veh min | Intersection veh min | Total veh min | Travel time cost (\$) | TTime Cost per Year (\$) | Link Congest. time cost (\$) | Congest.cost per Year(\$) | Total TT Cost per Year (\$) | Travel Time Benefit (\$) |
|------|-------------|--------|--------------|----------------------|---------------|-----------------------|--------------------------|------------------------------|---------------------------|-----------------------------|--------------------------|
| 2021 | AMP         | DOMIN  | 539349       | 103301               | 642650        | 246262                | 59,063,847               | 136                          | 32,618                    | 59,096,466                  |                          |
| 2021 | OFF         | DOMIN  | 1510149      | 244212               | 1754361       | 672271                | 437,706,909              | 0                            | 0                         | 437,706,909                 |                          |
| 2021 | PMP         | DOMIN  | 640148       | 147977               | 788125        | 302009                | 74,473,607               | 273                          | 67,320                    | 74,540,928                  |                          |
|      |             |        | 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                        |                              | 0                         | 0                           |                          |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                              | 0                         | 0                           |                          |
| 2021 | AMP         | OPTION | 524830       | 88993                | 613823        | 235216                | 56,414,558               | 0                            | 0                         | 56,414,558                  | 2,681,908                |
| 2021 | OFF         | OPTION | 1457574      | 225964               | 1683538       | 645131                | 420,036,407              | 0                            | 0                         | 420,036,407                 | 17,670,501               |
| 2021 | PMP         | OPTION | 618044       | 120111               | 738155        | 282860                | 69,751,579               | 0                            | 0                         | 69,751,579                  | 4,789,349                |
|      |             |        | 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                         | 0                           | 0                        |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                              | 0                         | 0                           | 0                        |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                              | 0                         | 0                           | 0                        |
|      |             |        | 0            |                      | 0             | 0                     | 0                        |                              | 0                         | 0                           | 0                        |
|      |             |        |              |                      |               |                       | 571,244,363              |                              |                           | 571,344,302                 |                          |
|      |             |        |              |                      |               |                       | 546,202,545              |                              |                           | 546,202,545                 | 25,141,758               |

### VEHICLE OPERATING COSTS (VOC)

**WORKSHEET A5.1**

| Period to Annual Conversion Factors |                  |               |
|-------------------------------------|------------------|---------------|
| Model Period                        | hours per period | days per year |
| AMP                                 | 0.6571           | 365           |
| OFF                                 | 1.7838           | 365           |
| PMP                                 | 0.6756           | 365           |
|                                     |                  |               |
|                                     |                  |               |
|                                     |                  |               |
|                                     |                  |               |
|                                     |                  |               |

| Description    |      |
|----------------|------|
| Do Min:        | DM3  |
| Option:        | P3B  |
| Year of Costs: | 2006 |

\$30.00 per tonne CO2

| Year | Time Period | Option | Total veh km | Network mean speed (km/hr) | CO2 Emission (tonnes) | VOC Links (\$) | VOC Int (\$) | VOC Speed Changes (\$) | Total VOC per period (\$) | Total VOC per period Annual (\$) | VOC Benefit per period Annual (\$) | CO2 costs (\$) | Annualised CO2 costs (\$) | VOC Benefit per period Annual (\$) |
|------|-------------|--------|--------------|----------------------------|-----------------------|----------------|--------------|------------------------|---------------------------|----------------------------------|------------------------------------|----------------|---------------------------|------------------------------------|
| 2001 | AMP         | DOMIN  | 339238       | 108.4                      | 77.227                | 68973          | 686          | 6691                   | 76,350                    | 18,311,899                       |                                    | 2,317          | 555,667                   |                                    |
| 2001 | OFF         | DOMIN  | 915446       | 107.7                      | 261.961               | 186460         | 1810         | 18039                  | 206,309                   | 134,325,108                      |                                    | 7,859          | 5,116,782                 |                                    |
| 2001 | PMP         | DOMIN  | 403614       | 107.6                      | 94.674                | 81969          | 841          | 8038                   | 90,848                    | 22,402,572                       |                                    | 2,840          | 700,381                   |                                    |
|      |             |        |              |                            |                       |                |              |                        | 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                         |                                    |
| 2001 | AMP         | OPTION | 340178       | 111.8                      | 72.868                | 69623          | 657          | 6401                   | 76,681                    | 18,391,286                       | -79,388                            | 2,186          | 524,303                   | 31,364                             |
| 2001 | OFF         | OPTION | 914030       | 110.9                      | 250.71                | 187573         | 1750         | 17050                  | 206,373                   | 134,366,777                      | -41,670                            | 7,521          | 4,897,021                 | 219,761                            |
| 2001 | PMP         | OPTION | 405048       | 111.8                      | 88.317                | 82860          | 804          | 7567                   | 91,231                    | 22,497,017                       | -94,446                            | 2,650          | 653,353                   | 47,028                             |
|      |             |        |              |                            |                       |                |              |                        | 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              | 0                         | 0                                  |
|      |             |        |              |                            |                       |                |              |                        |                           | 175,039,578                      |                                    |                | 6,372,830                 |                                    |
|      |             |        |              |                            |                       |                |              |                        |                           | 175,255,081                      | -215,503                           |                | 6,074,677                 | 298,153                            |
| Year | Time Period | Option | Total veh km | Network mean speed (km/hr) | CO2 Emission (tonnes) | VOC Links (\$) | VOC Int (\$) | VOC Speed Changes (\$) | Total VOC per period (\$) | Total VOC per period Annual (\$) | VOC Benefit per period Annual (\$) | CO2 costs (\$) | Annualised CO2 costs (\$) | VOC Benefit per period Annual (\$) |
| 2021 | AMP         | DOMIN  | 533583       | 101.8                      | 129.058               | 108269         | 1239         | 10797                  | 120,305                   | 28,854,132                       |                                    | 3,872          | 928,604                   |                                    |
| 2021 | OFF         | DOMIN  | 1471870      | 104.1                      | 440.265               | 299249         | 2931         | 29648                  | 331,828                   | 216,048,897                      |                                    | 13,208         | 8,599,525                 |                                    |
| 2021 | PMP         | DOMIN  | 625178       | 98.4                       | 152.522               | 126728         | 1776         | 12816                  | 141,320                   | 34,848,664                       |                                    | 4,576          | 1,128,330                 |                                    |
|      |             |        |              |                            |                       |                |              |                        | 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                         |                                    |
| 2021 | AMP         | OPTION | 538490       | 107.2                      | 121.722               | 110129         | 1068         | 9725                   | 120,922                   | 29,002,114                       | -147,982                           | 3,652          | 875,820                   | 52,784                             |
| 2021 | OFF         | OPTION | 1468484      | 107.8                      | 435.337               | 301266         | 2712         | 26653                  | 330,631                   | 215,269,546                      | 779,351                            | 13,060         | 8,503,268                 | 96,257                             |
| 2021 | PMP         | OPTION | 626831       | 105.6                      | 144.306               | 128074         | 1441         | 11468                  | 140,983                   | 34,765,562                       | 83,102                             | 4,329          | 1,067,550                 | 60,780                             |
|      |             |        |              |                            |                       |                |              |                        | 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              | 0                         | 0                                  |
|      |             |        |              |                            |                       |                |              |                        | 0                         | 0                                | 0                                  | 0              | 0                         | 0                                  |
|      |             |        |              |                            |                       |                |              |                        |                           | 279,751,693                      |                                    |                | 10,656,459                |                                    |
|      |             |        |              |                            |                       |                |              |                        |                           | 279,037,222                      | 714,471                            |                | 10,446,637                | 209,822                            |

## ANNUAL ACCIDENT BENEFITS

### Description

**Domin:** DM3

**Option: P3B**

**Year of Costs:**

2006

| Year | Period | Acc.Cost domin (\$) |        | Acc.Cost option(\$) |        | Accident Benefits (\$) | Periods per year | Annual Cost (\$) |             | Annual Benefit (\$) |
|------|--------|---------------------|--------|---------------------|--------|------------------------|------------------|------------------|-------------|---------------------|
|      |        | Links               | Ints   | Links               | Ints   |                        |                  | Do Min           | Option      |                     |
| 2001 | AMP    | 34,103              | 11,413 | 31,816              | 12,224 | 1,476                  | 239.8415         | 10,916,583       | 10,562,500  | 354,083             |
| 2001 | OFF    | 92,519              | 30,445 | 87,339              | 32,645 | 2,980                  | 651.087          | 80,060,392       | 78,119,931  | 1,940,461           |
| 2001 | PMP    | 40,733              | 13,379 | 37,714              | 14,133 | 2,264                  | 246.594          | 13,343,534       | 12,785,245  | 558,289             |
|      |        |                     |        |                     |        | 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                   |
|      |        |                     |        |                     |        |                        |                  | 104,320,509      | 101,467,677 | 2,852,832           |
| Year | Period | Acc.Cost domin (\$) |        | Acc.Cost option(\$) |        | Accident Benefits (\$) | Periods per year | Annual Cost (\$) |             | Annual Benefit (\$) |
|      |        | Links               | Ints   | Links               | Ints   |                        |                  | Do Min           | Option      |                     |
| 2021 | AMP    | 52,269              | 17,544 | 50,231              | 18,361 | 1,221                  | 239.8415         | 16,744,098       | 16,451,165  | 292,933             |
| 2021 | OFF    | 148,909             | 48,618 | 141,419             | 49,763 | 6,345                  | 651.087          | 128,607,236      | 124,475,959 | 4,131,277           |
| 2021 | PMP    | 62,078              | 20,588 | 59,262              | 21,274 | 2,130                  | 246.594          | 20,384,917       | 19,859,648  | 525,270             |
|      |        |                     |        |                     |        | 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                   |
|      |        |                     |        |                     |        |                        |                  | 165,736,251      | 160,786,771 | 4,949,480           |

DISCOUNTING RUC

|                        |      |
|------------------------|------|
| Year 0                 | 2006 |
| Project Start          | 2006 |
| Start of Construction  | 2007 |
| Years to Construct     | 1    |
| End of Analysis Period | 2033 |
| Start of Benefits      | 2008 |

Description  
Do Min: DM3  
Option: P3B  
Year of Costs: 2006

Using 24H acc costs

|                    | Year | Costs           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
|--------------------|------|-----------------|-----------------|----------------|-----------------|-----------------|--------------|---------------|---------------|--------------|----------------|----------------|---------------|-----------------|-----------------|----------------|
|                    |      | Travel Time     |                 |                | VOC             |                 |              | CO2           |               |              | Accident       |                |               | Total           |                 |                |
|                    |      | Do-min          | Option          | Benefit        | Do-min          | Option          | Benefit      | Do-min        | Option        | Benefit      | Do-min         | Option         | Benefit       | Do-min          | Option          | Benefit        |
| Model Year 1       | 2001 | 349,733,000     | 340,293,226     | 9,439,774      | 175,039,578     | 175,255,081     | -215,503     | 6,372,830     | 6,074,677     | 298,153      | 92,282,110     | 89,334,450     | 2,947,660     | 623,427,519     | 610,957,434     | 12,470,085     |
| Model Year 2       | 2021 | 571,344,302     | 546,202,545     | 25,141,758     | 279,751,693     | 279,037,222     | 714,471      | 10,656,459    | 10,446,637    | 209,822      | 146,624,010    | 142,536,340    | 4,087,670     | 1,008,376,464   | 978,222,743     | 30,153,720     |
| Model Year 3       | 0    | 0               | 0               | 0              | 0               | 0               | 0            | 0             | 0             | 0            | 0              | 0              | 0             | 0               | 0               | 0              |
| Year Zero          | 2006 | 405,135,826     | 391,770,556     | 13,365,270     | 201,217,607     | 201,200,616     | 16,991       | 7,443,738     | 7,167,667     | 276,070      | 105,867,585    | 102,634,923    | 3,232,663     | 719,664,755     | 702,773,761     | 16,890,994     |
| Growth rate pa     |      |                 |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| 2001 to 2021       |      | 0.0317          | 0.0303          | 0.0832         | 0.0299          | 0.0296          | -0.2158      | 0.0336        | 0.0360        | -0.0148      | 0.0294         | 0.0298         | 0.0193        | 0.0309          | 0.0301          | 0.0709         |
| 2021 to 0          |      | 0.0005          | 0.0005          | 0.0005         | 0.0005          | 0.0005          | 0.0005       | 0.0005        | 0.0005        | -0.0395      | -0.0395        | -0.0395        | -0.0395       | 0.0005          | 0.0005          | 0.0005         |
| 2006 to 2021       |      | 0.0274          | 0.0263          | 0.0587         | 0.0260          | 0.0258          | 2.7367       | 0.0288        | 0.0305        | -0.0160      | -0.0143        | -0.0141        | -0.0224       | 0.0267          | 0.0261          | 0.0523         |
| Benefit Start Time | 2008 | 2.0             |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| Benefit End Time   | 2033 | 27.0            |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| USPWF Start        |      | 1.821           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| USPWF End          |      | 9.692           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| Uniform Factor     |      | 7.871           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| AGPWF Start        |      | 0.048           | 0.046           | 0.104          | 0.046           | 0.045           | 4.825        | 0.051         | 0.054         | -0.028       | -0.025         | -0.025         | -0.039        | 0.047           | 0.046           | 0.092          |
| AGPWF End          |      | 2.190           | 2.104           | 4.704          | 2.084           | 2.065           | 219.149      | 2.304         | 2.442         | -1.281       | -1.148         | -1.128         | -1.791        | 2.142           | 2.092           | 4.192          |
| Growth Factor      |      | 2.142           | 2.058           | 4.600          | 2.038           | 2.020           | 214.324      | 2.253         | 2.388         | -1.253       | -1.123         | -1.103         | -1.752        | 2.095           | 2.046           | 4.099          |
| Combined Factor    |      | 10.013          | 9.929           | 12.471         | 9.909           | 9.891           | 222.195      | 10.124        | 10.259        | 6.618        | 6.748          | 6.768          | 6.119         | 9.965           | 9.917           | 11.970         |
| Stage 1 NPV        |      | \$4,056,521,742 | \$3,889,841,232 | \$ 166,680,510 | \$1,993,772,128 | \$1,989,996,856 | \$ 3,775,272 | \$ 75,361,864 | \$ 73,534,850 | \$ 1,827,014 | \$ 714,412,595 | \$ 694,631,551 | \$ 19,781,044 | \$7,171,708,738 | \$6,969,518,272 | \$ 202,190,466 |
| Benefit Start Time | 0    | 0.0             |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| Benefit End Time   | 0    | 0.0             |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| USPWF Start        |      | 0.000           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| USPWF End          |      | 0.000           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| Uniform Factor     |      | 0.000           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| AGPWF Start        |      | 0.000           | 0.000           | 0.000          | 0.000           | 0.000           | 0.000        | 0.000         | 0.000         | 0.000        | 0.000          | 0.000          | 0.000         | 0.000           | 0.000           | 0.000          |
| AGPWF End          |      | 0.000           | 0.000           | 0.000          | 0.000           | 0.000           | 0.000        | 0.000         | 0.000         | 0.000        | 0.000          | 0.000          | 0.000         | 0.000           | 0.000           | 0.000          |
| Growth Factor      |      | 0.000           | 0.000           | 0.000          | 0.000           | 0.000           | 0.000        | 0.000         | 0.000         | 0.000        | 0.000          | 0.000          | 0.000         | 0.000           | 0.000           | 0.000          |
| Combined Factor    |      | 0.000           | 0.000           | 0.000          | 0.000           | 0.000           | 0.000        | 0.000         | 0.000         | 0.000        | 0.000          | 0.000          | 0.000         | 0.000           | 0.000           | 0.000          |
| Stage 2 Benefit    |      | \$0             | \$0             | \$0            | \$0             | \$0             | \$0          | \$0           | \$0           | \$0          | \$0            | \$0            | \$0           | \$0             | \$0             | \$0            |
| SPPWF to Year 0    | 2006 | 0.000           |                 |                |                 |                 |              |               |               |              |                |                |               |                 |                 |                |
| Stage 2 NPV        |      | \$0             | \$0             | \$0            | \$0             | \$0             | \$0          | \$0           | \$0           | \$0          | \$0            | \$0            | \$0           | \$0             | \$0             | \$0            |

|                          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PEMVOC.DO5               | 1.07 | 1.07 | 1.07 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 |      |      |      |      |      |      |
| 2006 Update Factors      | 1.11 | 1.11 | 1.11 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.12 | 1.12 | 1.12 |      |      |      |
| Update Factor Adjustment | 1.04 | 1.04 | 1.04 | 1.16 | 1.16 | 1.16 | 1.16 | 1.16 | 1.16 | 1.16 | 1.12 | 1.12 | 1.12 | 1.03 | 1.03 | 1.00 |

|                       |                 |                 |               |                 |                 |             |              |              |             |               |               |              |                 |                 |               |
|-----------------------|-----------------|-----------------|---------------|-----------------|-----------------|-------------|--------------|--------------|-------------|---------------|---------------|--------------|-----------------|-----------------|---------------|
| TOTAL NPV             | \$4,208,167,415 | \$4,035,255,858 | \$172,911,557 | \$2,314,199,791 | \$2,309,817,779 | \$4,382,012 | \$87,473,592 | \$85,352,951 | \$2,120,641 | \$800,142,106 | \$777,987,337 | \$22,154,769 | \$7,409,982,904 | \$7,208,413,925 | \$201,568,979 |
| %age NPV by Cost Type |                 |                 | 82%           |                 |                 | 2%          |              |              | 1%          |               |               | 10%          |                 |                 |               |

|                 |               |
|-----------------|---------------|
| Grand Total NPV | \$202,190,466 |
|-----------------|---------------|

growth reduced by 0.04 for policy

Adjustment Factor 1  
for year of estimate  
(to July 2000 \$)

|                                             |               |
|---------------------------------------------|---------------|
| Total PV Time Zero<br>adjusted to base date | \$202,190,466 |
|---------------------------------------------|---------------|

# DISCOUNTING COSTS

Description

Do Min: DM3

Option: P3B

Year of Costs: 2006

Year of estimate 2006 Project Start 2006  
Time Zero 2006 Start Construction 2007

| Type of Cost              |         | Pre-Construction    | Construction          | Construction           | Maintain.    | Reseals    |
|---------------------------|---------|---------------------|-----------------------|------------------------|--------------|------------|
| <b>SINGLE Payment</b>     |         |                     |                       |                        |              |            |
| <b>Description</b>        |         | <b>Land Costs</b>   | <b>Construction 1</b> | <b>Contract Fees 1</b> |              |            |
| Amount                    |         | \$0                 | \$181,160,771         | \$0                    | \$0          | \$0        |
| Time                      | n       | 0                   | 1                     | 0                      | 0            | 0          |
| SSPWF for time n          |         | 1.000               | 0.909                 | 1.000                  | 1.000        | 1.000      |
| PV Time Zero              |         | \$0                 | \$164,691,610         | \$0                    | \$0          | \$0        |
| <b>SINGLE Payment</b>     |         |                     |                       |                        |              |            |
| <b>Description</b>        |         | <b>Land Costs 2</b> | <b>Construct 2</b>    | <b>Contract Fees 2</b> |              |            |
| Amount                    |         | \$0                 | \$0                   | \$0                    | \$0          | \$0        |
| Time                      | n       | 0                   | 0                     | 0                      | 0            | 0          |
| SSPWF for time n          |         | 1.000               | 1.000                 | 1.000                  | 1.000        | 1.000      |
| PV Time Zero              |         | \$0                 | \$0                   | \$0                    | \$0          | \$0        |
| <b>SINGLE Payment</b>     |         |                     |                       |                        |              |            |
| <b>Description</b>        |         | <b>Land Costs 3</b> | <b>Construct 3</b>    | <b>Contract Fees 3</b> |              |            |
| Amount                    |         | \$0                 | \$0                   | \$0                    | \$0          | \$0        |
| Time                      | n       | 0                   | 0                     | 0                      | 0            | 0          |
| SSPWF for time n          |         | 1.000               | 1.000                 | 1.000                  | 1.000        | 1.000      |
| PV Time Zero              |         | \$0                 | \$0                   | \$0                    | \$0          | \$0        |
|                           |         |                     |                       |                        |              |            |
| <b>UNIFORM Series</b>     |         |                     |                       |                        |              |            |
|                           |         |                     |                       |                        | Maintainance |            |
| Annual Amount             |         |                     |                       |                        | \$0          |            |
| Start Time                | s       |                     |                       |                        | 0.0          |            |
| End Time                  | e       |                     |                       |                        | 27.0         |            |
| USPWF                     | s years |                     |                       |                        |              |            |
| USPWF                     | e years |                     |                       |                        |              |            |
| Uniform Factor            |         |                     |                       |                        | 0.000        |            |
| PV Time Zero              |         |                     |                       |                        | \$0          |            |
|                           |         |                     |                       |                        |              |            |
| Total PV Time Zero        |         | \$0                 | \$164,691,610         | \$0                    | \$0          | \$0        |
| Adjustment Factor         |         |                     |                       |                        |              |            |
| for year of estimate      |         | 1.000               | 1.000                 | 1.000                  | 1.000        | 1.000      |
| (to July 1999 \$)         |         |                     |                       |                        |              |            |
|                           |         |                     |                       |                        |              |            |
| <b>Total PV Time Zero</b> |         | <b>\$0</b>          | <b>\$164,691,610</b>  | <b>\$0</b>             | <b>\$0</b>   | <b>\$0</b> |
| adjusted to base date     |         |                     |                       |                        |              |            |

|                                |                      |
|--------------------------------|----------------------|
| <b>Total NPV Construction</b>  | <b>\$164,691,610</b> |
| <b>Total NPV Maint./Reseal</b> | <b>\$0</b>           |