APPENDIX & TABLES

1-Sep-04 Revised

SUMMARY STATISTICS FOR PLANNED MAGLEV PROJECTS IN U.S.& GERMANY

Project	Baltimore-Washington	Pittsburgh	Pittsburgh IOS	Anaheim-ONT	Las Vegas-Primm	Munich
Date most recent data supplied by project	2/4/2004	8/31/2004	8/31/2004	3/22/2004	2/5/2004	2/4/2004
PROPOSED OPERATING CHARACTERISTICS						
Train Sets (initial operation)						
Number (including spares)	7	8	4	6	3	5
Sections per Train Set	3	3	3	4	8	3
Seated Capacity per Train	190	148	148	338	720	156
Passenger Capacity per Train	396	344	344	568	940	307
Peak Hour Seated Capacity (one direction)	1,140	1,036	888	2,028	2,160	936
Peak Hour Total Capacity (one direction)	2,376	2,408	2,064	3,408	2,820	1,842
Operational Speed						
Average in km/h	203	148	142	210	280	220
Maximum in km/h	415	402	402	320	500	350
Travel Time End-to-end in minutes	18.5	35	11	14.5	11	10
Frequency of Service (headways)						
Peak Period Headway in minutes	10	8.5	10	10	20	10
Off-peak Headways in minutes	20-30	10	10	10	30	20
Number of Round Trips per week	457	804	756	798	336	805
Million Train-km per year	2.93	5.58	1.75	4.20	2.00	3.10
Hours of Operation						
Daily Operation in Total Hours	20	18	18	19	19	20
Number Stations	3	5	3	2	2	2
PASSENGERS, FARES & REVENUES						
Year	2010	2012	2010	2010	2010	2015
Annual Passengers, millions	9.17	14.2	3.3	10.3	13.5	7.9
Pass.-km , millions	393.3	519.9	93.3	522.2	756	291
Annual Revenues ($M)						
Farebox	$184.00	$96.60	$18.80	$93.10	$78.60	$71.80
Other	$12.40	$43.40		$6.30	$4.40	
Total Annual	$196.40	$140.00	$18.80	$99.40	$83.00	$71.80
Average Fares in ($)						
Average Fare/passenger	$20.07	$6.80	$5.70	$9.00	$5.82	$9.09
Average Fare/passenger-km	$0.47	$0.19	$0.20	$0.28	$0.10	$0.25
GUIDEWAY & FIXED FACILITIES						
Guideway Length, km.						
Route (Excl. access to Mant. Fac.)	62.9	87.5	28.3	51	56	36.8
Double Track	62.9	54.2	25.9	51	18.4	36.8
Single Track	1.9	33.3	2.4	0	37.5	0
Elevated	20.5	87.5	28.3	41.6	19	12.7
At-grade	32.5	0	0	9.9	37	17
Tunnel	9.9	0	0	0	0	8

Maximum Grades in %	3.2	8.1	6.5	2	3.1	
Electrical Energy & Power Requirements						
Year	2010	2012	2010	2010	2010	
Annual energy, GWh	114	182	89	148	153	
Number Substations	2	5	2	2	2	2
Maximum Power in MW	35	25	25	40	48	
kWh per train km	39.1	32.7	50.7	35.2	76.3	
J/seat-m	740	794	1,234	375	382	
Maintenance & Storage Facilities						
Storage Capacity, No.Trains	7	5	4	6	5	5
Access & Yard Guideway, km	1.9	5	5	1.5	1.5	1
CAPITAL & OPERATING COSTS in constant monetary units						
Monetary unit base year	2002	2003	2003	2000	2000	2002
Contingency Factor Applied	10-30%	10-30%	10-30%	10% - 20%	10% - 20%	
Capital Costs, ($M)						
Right-of way	$92.00	$151.00	$66.20	$67.00	$10.10	$37.10
Guideway	$1,694.00	$1,802.30	$725.40	$1,717.70	$599.50	$951.70
Propulsion, Control & Communication Systems	$589.00	$246.80	$88.80	$310.20	$244.90	$358.40
Maintenance Facilities	$68.00	$44.40	$44.40	$59.90	$33.60	
Power Distribution	$47.00	$64.00	$32.00	$26.00	$36.50	$34.60
Stations & Parking	$396.00	$386.10	$141.40	$79.40	$20.80	
Vehicle Acquisition	$245.00	$208.80	$104.40	$234.40	$213.50	$201.50
Financial & Other	$610.00	$821.90	$347.40	$276.00	$127.70	$394.30
Total Capital Cost	$3,741.00	$3,725.30	$1,550.00	$2,770.60	$1,286.70	$1,977.50
Unit Capital Costs, initial yr.						
Guideway Cost, ($M/km)	$26.90	$20.60	$25.60	$33.70	$10.70	$25.90
Propulsion, Control and Communications, ($M/km)	$9.40	$2.80	$3.10	$6.10	$4.40	$9.70
Guideway Cost, passenger-km / $	$4.30	$3.50	$7.80	$3.30	$0.80	$3.30
Maintenance Facilities Cost, $M/vehicle	$3.20	$1.90	$3.70	$2.50	$1.40	
Power Distrib. Cost, ($M/km)	$0.70	$0.70	$1.10	$0.50	$0.70	$0.90
Average Station Cost, ($M/station)	$132.00	$77.20	$47.10	$39.70	$10.40	
Vehicle Cost, ($M/vehicle)	$11.70	$8.70	$8.70	$9.80	$8.90	$13.40
Total Capital Cost, ($M/km)	$59.50	$42.60	$54.80	$54.30	$23.00	$53.70
Annual Operation & Maintenance Costs, (M$/yr.)						
Year	2020	2012	2010	2020	2020	2015
Energy Consumption Cost	$11.30	$10.20	$5.00	€ 13.30	$11.10	$11.25
Total Operating & Maintenance Costs	$53.00	$37.30	$16.70	€ 44.90	$35.70	$40.17
Annual O & M Unit Costs, ($)/Unit						
Energy cost, ($/MWhr)	$98.80	$56.00	$56.30	$89.90	$72.70	
Energy Cost/Train-km	$3.86	$1.83	$2.86	$3.17	$5.55	$3.63
Total O & M Costs/Train-km	$18.10	$6.70	$9.50	$10.70	$17.90	$13.00
Total O & M Costs/ passenger-km	$0.13	$0.07	$0.18	$0.09	$0.05	$0.14

* Exchange Rate 1-Sep-04 1 U.S. $= 0.82 €

BALTIMORE-WASHINGTON MAGLEV PROJECT

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	7
Sections per Train Set	3
Seated Capacity per Train	190
Passenger Capacity per Train	396
Peak Hour Seated Capacity (one direction)	1,140
Peak Hour Total Capacity (one direction)	2,376
Operational Speed	
Average in km/h	203
Maximum in km/h	415
Travel Time End-to-end in minutes	18.5
Frequency of Service (headways)	
Peak Period Headway in minutes	10
Off-peak Headways in minutes	20-30
Number of Round Trips per week	457
Million Train-km per year	2.93
Hours of Operation	
Daily Operation in Total Hours	20
Number Stations	3

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	9.17
Pass.-km , millions	393.3
Annual Revenues ($M)	
Farebox	$ 184.0
Other	$ 12.4
Total Annual	$ 196.4
Average Fares in ($)	
Average Fare/passenger	$ 20.07
Average Fare/passenger-km	$ 0.47

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	62.9
Double Track	62.9
Single Track	1.9
Elevated	20.5
At-grade	32.5
Tunnel	9.9
Maximum Grades in %	3.20
Electrical Energy & Power Requirements	
Year	2010
Annual energy, GWh	114
Number Substations	2
Maximum Power in MW	35
Maintenance & Storage Facilities	
Storage Capacity, No.Trains	7
Access & Yard Guideway, km	1.9

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	10-30%
Capital Costs, ($M)	
Right-of way	$ 92.0
Guideway	$ 1,694.0
Propulsion, Control & Communication Systems	$ 589.0
Maintenance Facilities	$ 68.0
Power Distribution	$ 47.0
Stations & Parking	$ 396.0
Vehicle Acquisition	$ 245.0
Financial & Other	$ 610.0
Total Capital Cost	$ 3,741.0
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2020
Energy Consumption Cost	$ 11.3
Total Operating & Maintenance Costs	$ 53.0

PITTSBURGH - FULL PROJECT

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	8
Sections per Train Set	3
Seated Capacity per Train	148
Passenger Capacity per Train	344
Peak Hour Seated Capacity (one direction)	1,036
Peak Hour Total Capacity (one direction)	2,408
Operational Speed	
Average in km/h	148
Maximum in km/h	402
Travel Time End-to-end in minutes	35.0
Frequency of Service (headways)	
Peak Period Headway in minutes	9
Off-peak Headways in minutes	10
Number of Round Trips per week	804
Million Train-km per year	5.58
Hours of Operation	
Daily Operation in Total Hours	18
Number Stations	5

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	14.2
Pass.-km , millions	519.9
Annual Revenues ($M)	
Farebox	$ 96.6
Other	$ 43.4
Total Annual	$ 140.0
Average Fares in ($)	
Average Fare/passenger	$6.79
Average Fare/passenger-km	$0.30

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	87.5
Double Track	54.2
Single Track	33.3
Elevated	87.5
At-grade	0.0
Tunnel	0.0
Maximum Grades in %	8.1
Electrical Energy & Power Requirements	
Year	2012
Annual energy, GWh	182
Number Substations	5
Maximum Power in MW	25.0
Maintenance & Storage Facilities	
Storage Capacity, No.Trains	5
Access & Yard Guideway, km	5.0

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	10-30%
Capital Costs, ($M)	
Right-of way	$ 151.0
Guideway	$ 1,802.3
Propulsion, Control & Communication Systems	$ 246.8
Maintenance Facilities	$ 44.4
Power Distribution	$ 64.0
Stations & Parking	$ 386.1
Vehicle Acquisition	$ 208.8
Financial & Other	$ 821.9
Total Capital Cost	$ 3,725.3
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2012
Energy Consumption Cost	$ 10.2
Total Operating & Maintenance Costs	$ 37.3

PITTSBURGH - INITIAL OPERATING SEGMENT (IOS)

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	4
Sections per Train Set	3
Seated Capacity per Train	148
Passenger Capacity per Train	344
Peak Hour Seated Capacity (one direction)	888
Peak Hour Total Capacity (one direction)	2,064
Operational Speed	
Average in km/h	142
Maximum in km/h	402
Travel Time End-to-end in minutes	11
Frequency of Service (headways)	
Peak Period Headway in minutes	10
Off-peak Headways in minutes	10
Number of Round Trips per week	756
Million Train-km per year	1.75
Hours of Operation	
Daily Operation in Total Hours	18
Number Stations	3

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	3.3
Pass.-km , millions	93.3
Annual Revenues ($M)	
Farebox	$19.70
Other	$10.30
Total Annual	$30.10
Average Fares in ($)	
Average Fare/passenger	$5.99
Average Fare/passenger-km	$0.34

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	28.3
Double Track	25.9
Single Track	2.4
Elevated	28.3
At-grade	0
Tunnel	0
Maximum Grades in %	6.5
Electrical Energy & Power Requirements	
Year	2010
Annual energy, GWh	88.8
Number Substations	2
Maximum Power in MW	25
Maintenance & Storage Facilities	
Storage Capacity, No.Trains	4
Access & Yard Guideway, km	5

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	10-30%
Capital Costs, ($M)	
Right-of way	$66.20
Guideway	$725.40
Propulsion, Control & Communication Systems	$88.80
Maintenance Facilities	$44.40
Power Distribution	$32.00
Stations & Parking	$141.40
Vehicle Acquisition	$104.40
Financial & Other	$347.40
Total Capital Cost	$1,550.00
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2010
Energy Consumption Cost	$ 5.0
Total Operating & Maintenance Costs	$ 16.7

ANAHEIM TO ONTARIO SEGMENT
LAS VEGAS TO ANAHEIM MAGLEV PROJECT

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	6
Sections per Train Set	4
Seated Capacity per Train	338
Passenger Capacity per Train	568
Peak Hour Seated Capacity (one direction)	2,028
Peak Hour Total Capacity (one direction)	3,408
Operational Speed	
Average in km/h	210
Maximum in km/h	320
Travel Time End-to-end in minutes	14.5
Frequency of Service (headways)	
Peak Period Headway in minutes	10
Off-peak Headways in minutes	10
Number of Round Trips per week	798
Million Train-km per year	4.20
Hours of Operation	
Daily Operation in Total Hours	19
Number Stations	2

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	10.3
Pass.-km , millions	522.2
Annual Revenues ($M)	
Farebox	$ 93.1
Other	$ 6.3
Total Annual	$ 99.4
Average Fares in ($)	
Average Fare/passenger	$ 9.00
Average Fare/passenger-km	$ 0.28

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	51
Double Track	51
Single Track	0
Elevated	41.6
At-grade	9.9
Tunnel	0
Maximum Grades in %	2.0
Electrical Energy & Power Requirements	
Year	2010
Annual energy, GWh	148
Number Substations	2
Maximum Power in MW	40
Maintenance & Storage Facilities	
Storage Capacity, No.Trains	6
Access & Yard Guideway, km	1.5

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	10-20%
Capital Costs, ($M)	
Right-of way	$ 67.0
Guideway	$ 1,717.7
Propulsion, Control & Commun. Systems	$ 310.2
Maintenance Facilities	$ 59.9
Power Distribution	$ 26.0
Stations & Parking	$ 79.4
Vehicle Acquisition	$ 234.4
Financial & Other	$ 276.0
Total Capital Cost	$ 2,770.6
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2020
Energy Consumption Cost	$ 13.3
Total Operating & Maintenance Costs	$ 44.9

LAS VEGAS TO PRIMM SEGMENT
LAS VEGAS TO ANAHEIM MAGLEV PROJECT

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	3
Sections per Train Set	8
Seated Capacity per Train	720
Passenger Capacity per Train	940
Peak Hour Seated Capacity (one direction)	2,160
Peak Hour Total Capacity (one direction)	2,820
Operational Speed	
Average in km/h	280
Maximum in km/h	500
Travel Time End-to-end in minutes	11.0
Frequency of Service (headways)	
Peak Period Headway in minutes	20
Off-peak Headways in minutes	30
Number of Round Trips per week	336
Million Train-km per year	2.00
Hours of Operation	
Daily Operation in Total Hours	19
Number Stations	2

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	13.5
Pass.-km , millions	756.0
Annual Revenues ($M)	
Farebox	$ 78.6
Other	$ 4.4
Total Annual	$ 83.0
Average Fares in ($)	
Average Fare/passenger	$ 5.82
Average Fare/passenger-km	$ 0.10

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	56.0
Double Track	18.5
Single Track	37.5
Elevated	19.0
At-grade	37.0
Tunnel	0.0
Maximum Grades in %	3.1
Electrical Energy & Power Requirements	
Year	2010
Annual energy, GWh	153
Number Substations	2
Maximum Power in MW	48.0
Maintenance & Storage Facilities	76.3
Storage Capacity, No.Trains	5
Access & Yard Guideway, km	1.5

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	10-20%
Capital Costs, ($M)	
Right-of way	$ 10.1
Guideway	$ 599.5
Propulsion, Control & Communication Systems	$ 244.9
Maintenance Facilities	$ 33.6
Power Distribution	$ 36.5
Stations & Parking	$ 20.8
Vehicle Acquisition	$ 213.5
Financial & Other	$ 127.7
Total Capital Cost	$ 1,286.6
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2020
Energy Consumption Cost	$ 11.1
Total Operating & Maintenance Costs	$ 35.7

MUNICH, BAVARIA MAGLEV PROJECT

PROPOSED OPERATING CHARACTERISTICS

Train Sets (initial operation)	
Number (including spares)	5
Sections per Train Set	3
Seated Capacity per Train	156
Passenger Capacity per Train	307
Peak Hour Seated Capacity (one direction)	18,720
Peak Hour Total Capacity (one direction)	36,840
Operational Speed	
Average in km/h	220
Maximum in km/h	350
Travel Time End-to-end in minutes	10.0
Frequency of Service (headways)	
Peak Period Headway in minutes	10
Off-peak Headways in minutes	20
Number of Round Trips per week	805
Million Train-km per year	3.10
Hours of Operation	
Daily Operation in Total Hours	20
Number Stations	2

PASSENGERS, FARES & REVENUES

Annual Passengers, millions	7.9
Pass.-km , millions	291.0
Annual Revenues ($M)	
Farebox	$ 71.8
Other	
Total Annual	$ 71.8
Average Fares in ($)	
Average Fare/passenger	$ 9.09
Average Fare/passenger-km	$ 0.25

GUIDEWAY & FIXED FACILITIES

Guideway Length, km.	
Route (Excl. access to Mant. Fac.)	36.8
Double Track	36.8
Single Track	0.0
Elevated	12.7
At-grade	17.0
Tunnel	8.0
Maximum Grades in %	
Electrical Energy & Power Requirements	
Year	
Annual energy, GWh	
Number Substations	2
Maximum Power in MW	
Maintenance & Storage Facilities	
Storage Capacity, No.Trains	5
Access & Yard Guideway, km	1.0

CAPITAL & OPERATING COSTS in constant $

Contingency Factor Applied	
Capital Costs, ($M)	
Right-of way	$ 37.1
Guideway	$ 951.7
Propulsion, Control & Communication Systems	$ 358.4
Maintenance Facilities	$ -
Power Distribution	$ 34.6
Stations & Parking	$ -
Vehicle Acquisition	$ 201.5
Financial & Other	$ 394
Total Capital Cost	$ 1,977.5
Annual Operation & Maintenance Costs, (M$/yr.)	
Year	2015
Energy Consumption Cost	$ 11.25
Total Operating & Maintenance Costs	$ 40.2

TABLE 1.
INDICATORS OF PROJECT DIVERSITY

Project	Baltimore to Washington	Full Pittsburgh	Pittsburgh IOS	Anaheim to Ontario	Las Vegas to Primm	Munich
Project Diversity						
Guideway Length						
Route Length (km)	62.9	87.5	28.3	51.0	56.0	36.8
Track Length (km)	125.8	141.7	54.2	102.0	74.5	73.6
%Track Length, Dual	100.0%	61.9%	91.5%	100.0%	33.0%	100.0%
%Track Length Single	0.0%	38.1%	8.5%	0.0%	67.0%	0.0%
% Route Elevated	32.6%	100.0%	100.0%	81.6%	33.9%	34.5%
% Route At-Grade	51.7%	0.0%	0.0%	19.4%	66.1%	46.2%
% RouteTunnel	15.7%	0.0%	0.0%	0.0%	0.0%	21.7%
Annual Ridership						
Passengers	9.2	14.2	3.3	10.3	13.5	7.9
Passenger-km	393.3	519.9	93.3	522.2	756.0	291.0
Number Vehicles	21.0	24.0	12.0	24.0	24.0	15.0
Stations						
Number	3	5	3	2	2	2
Average Spacing (km)	31	22	14	51	56	37
Speed (km/hr)						
Maximum	415.0	402.0	402.0	320.0	500.0	350.0
Average	203.2	148.0	142.0	210.0	280.0	220.0
Maximum Grade (%)	3.2	8.1	6.5	2.0	3.1	NA
Service Provided						
Vehicle Travel (MVehicle-km)	8.79	16.74	5.25	16.80	16.00	9.30
Energy Use (KWh/Vehicle-km)	13.03	10.90	16.90	8.80	9.54	NA

TABLE 2.

COMPARISON OF ESTIMATED CAPITAL COSTS FOR CURRENTLY PLANNED MAFGLEV PROJECTS (Constant $)

9/1/2004

Project	Baltimore to Washington		Full Pittsburgh		Pittsburgh Initial Op. Seg (IOS)		Anaheim to Ontario		Las Vegas to Primm		Munich		
Date most recent data supplied by project	2/4/2004		8/31/2004		8/31/2004		3/22/2004		2/5/2004		2/4/2004		
Year of Constant $	2002		2003		2003		2000		2000		2002		
Contingency Factor Applied	10-30%		10-30%		10-30%		10% - 20%		10% - 20%		NA		
Capital Costs, ($M)	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	AVG.
Right-of way	$ 92.0	2.5%	$ 151.0	4.1%	$ 66.2	4.3%	$ 67.0	2.4%	$ 10.1	0.8%	$ 37.1	1.9%	2.6%
Guideway	$ 1,694.0	45.3%	$ 1,802.3	48.4%	$ 725.4	46.8%	$ 1,717.7	62.0%	$ 599.5	46.6%	$ 951.7	48.1%	49.5%
Propul.,Control, & Comm. Sys	$ 589.0	15.7%	$ 246.8	6.6%	$ 88.8	5.7%	$ 310.2	11.2%	$ 244.9	19.0%	$ 358.4	18.1%	12.7%
Maintenance Facilities	$ 68.0	1.8%	$ 44.4	1.2%	$ 44.4	2.9%	$ 59.9	2.2%	$ 33.6	2.6%	$ -	0.0%	1.8%
Power Distribution	$ 47.0	1.3%	$ 64.0	1.7%	$ 32.0	2.1%	$ 26.0	0.9%	$ 36.5	2.8%	$ 34.6	1.8%	1.8%
Stations & Parking	$ 396.0	10.6%	$ 386.1	10.4%	$ 141.4	9.1%	$ 79.4	2.9%	$ 20.8	1.6%	$ -	0.0%	5.8%
Vehicle Acquisition	$ 245.0	6.5%	$ 208.8	5.6%	$ 104.4	6.7%	$ 234.4	8.5%	$ 213.5	16.6%	$ 201.5	10.2%	9.0%
Financial & Other	$ 610.0	16.3%	$ 821.9	22.1%	$ 347.4	22.4%	$ 276.0	10.0%	$ 127.7	9.9%	$ 394.3	19.9%	16.8%
Total Capital Cost	$ 3,741.0	100.0%	$ 3,725.3	100.0%	$ 1,550.0	100.0%	$ 2,770.6	100.0%	$ 1,286.7	100.0%	$ 1,977.5	100.0%	
Guideway+PC&C+Power	$ 2,330.0	62.3%	$ 2,113.1	56.7%	$ 846.2	54.6%	$ 2,053.9	74.1%	$ 880.9	68.5%	$ 1,344.7	68.0%	64.0%
PC&C+ Vehicles	$ 834.0	22.3%	$ 455.6	12.2%	$ 193.2	12.5%	$ 544.6	19.7%	$ 458.4	35.6%	$ 559.9	28.3%	21.8%

TABLE 3.

COMPARISON OF ESTIMATED UNIT CAPITAL COSTS FOR CURRENTLY PLANNED MAGLEV PROJECTS (Constant $)

Project	Baltimore to Washington	Full Pittsburgh	Pittsburgh IOS	Anaheim to Ontario	Las Vegas to Primm	Munich
Year of Constant $	2002	2003	2003	2000	2000	2002
Contingency Factor Applied	10-30%	10-30%	10-30%	10% - 20%	10% - 20%	
Unit Capital Costs, ($M)	Cost	Cost	Cost	Cost	Cost	Cost
Guideway Cost, ($M/route-km)	$ 26.9	$ 20.6	$ 25.6	$ 30.7	$ 11.75	$ 25.9
($M/track-km)	$ 13.5	$ 12.7	$ 13.4	$ 15.3	$ 8.8	$ 12.9
Propul., Control and Comm. ($M/route-km)	$ 9.4	$ 2.8	$ 3.1	$ 5.5	$ 4.8	$ 9.7
($M/track-km)	$ 4.7	$ 1.7	$ 1.6	$ 2.8	$ 3.6	$ 4.9
Guideway Cost, ($/passenger-km)	$ 4.3	$ 3.5	$ 7.8	$ 2.3	$ 1.1	$ 3.3
Maintenance Facilities Cost,($M/vehicle)	$ 3.2	$ 1.9	$ 3.7	$ 2.5	$ 1.4	$ -
Power Distrib. Cost, ($M/route-km)	$ 0.7	$ 0.7	$ 1.1	$ 0.5	$ 0.7	$ 0.9
Average Station Cost, ($M/station)	$ 132.0	$ 77.2	$ 47.1	$ 39.7	$ 10.4	$ -
Vehicle Cost, ($M/vehicle)	$ 11.7	$ 8.7	$ 8.7	$ 9.8	$ 8.9	$ 13.4
Total Capital Cost, ($M/route-km)	$ 59.5	$ 42.6	$ 54.8	$ 49.5	$ 25.2	$ 53.7
($M/track-km)	$ 29.7	$ 26.3	$ 28.6	$ 24.7	$ 19.0	$ 26.9
Guideway+PC&C+Power ($M/route-km)	$ 37.0	$ 24.1	$ 29.9	$ 36.7	$ 17.3	$ 36.5
($M/track-km)	$ 18.5	$ 14.9	$ 15.6	$ 18.3	$ 13.0	$ 18.3
PC&C+ Vehicles, ($M/route-km)	$ 13.3	$ 5.2	$ 6.8	$ 9.7	$ 8.2	$ 15.2
($M/track-km)	$ 6.6	$ 3.2	$ 3.6	$ 4.9	$ 6.2	$ 7.6

TABLE 4.
COMPARISON OF ESTIMATED ANNUAL O&M COSTS, & UNIT COSTS FOR CURRENTLY PLANNED MAGLEV PROJECTS

Project	Baltimore to Washington		Full Pittsburgh		Pittsburgh Initial Op. Seg		Anaheim to Ontario		Las Vegas to Primm		Munich		
Year of Operation	2020		2012		2010		2020		2020		2015		
Annual O&M Costs	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	Cost	% Total	Average
Energy Consumption Cost (M$/yr.)	$ 11.3	21.3%	$ 10.2	27.3%	$ 5.0	29.9%	$ 13.3	29.6%	$ 11.10	31.1%	$ 11.2	28.0%	27.9%
Total Annual O&M Cost (M$/yr.)	$ 53.0	100.0%	$ 37.3	100.0%	$ 16.7	100.0%	$ 44.9	100.0%	$ 35.70	100.0%	$ 40.2	100.0%	
Unit Costs of Annual O&M,													
Energy Costs ($/MWh)	$ 98.8		$ 56.0		$ 56.3		$ 89.9		$ 72.5		NA		
($/Train-km)	$ 3.9		$ 1.8		$ 2.9		$ 3.2		$ 5.6		$ 3.6		
($/Vehicle-km)	$ 1.3		$ 0.6		$ 1.0		$ 0.8		$ 0.7		$ 1.2		
Total O&M Costs ($/Train-km)	$ 18.1		$ 6.7		$ 9.5		$ 10.7		$ 17.9		$ 13.0		
($/Vehicle-km)	$ 6.0		$ 2.2		$ 3.2		$ 2.7		$ 2.2		$ 4.3		$ 3.44