

Capital Cost Calculation Worksheet

Mode: BRT 1

Cost Element	Via 23rd					Via 26th				
	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost
Station	5	\$100,000	\$500,000	0.081	\$40,500	6	\$100,000	\$600,000	0.081	\$48,600
Vehicles	5	\$480,000	\$2,400,000	0.126	\$302,400	5	\$480,000	\$2,400,000	0.126	\$302,400
OCS	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
Guideway - TSP and LTP	18	\$35,000	\$630,000	0.081	\$51,030	21	\$35,000	\$735,000	0.081	\$59,535
Guideway - Queue Jump	10	\$50,000	\$500,000	0.081	\$40,500	8	\$50,000	\$400,000	0.081	\$32,400
Angles	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
ROW Impacts	0	\$379,500	\$379,500	0.070	\$26,565	0	\$274,000	\$274,000	0.070	\$19,180
Maintenance Facility	1	\$1,250,000	\$1,250,000	0.081	\$101,250	1	\$1,250,000	\$1,250,000	0.081	\$101,250
Subtotal			\$5,659,500		\$562,245			\$5,659,000		\$563,365
Contingency	30%		\$1,697,850		\$168,674	30%		\$1,697,700		\$169,010
Total Alternative Capital Cost			\$7,357,350		\$730,919			\$7,356,700		\$732,375

- Stations Station cost include all costs associated with the stopping places for this mode, platforms, shelters, signage, furniture, real time
- Vehicles Vehicles costs include the typical cost of the type of vehicle proposed for this technology.
- OCS OCS includes all costs associated with the overhead contact system including wire, poles, substations
- Guideway Guideway includes the cost of adding additional lanes, queue jump lanes, bus priority in the case of BRT, track and transit
- Angles Angles include angle stations for cableway only.
- ROW Impacts ROW impacts include traffic modifications, utilities, and property takings.
- Maintenance Facility Maintenance facility includes all costs, property, structure and equipment for a maintenance facility for the modes that require one, LRT, streetcar and cableway. BRT assumes the use of existing garages.

Capital Cost Calculation Worksheet

Mode: BRT 2

Cost Element	Via 23rd					Via 26th				
	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost
Station	5	\$200,000	\$1,000,000	0.081	\$81,000	6	\$200,000	\$1,200,000	0.081	\$97,200
Vehicles	5	\$650,000	\$3,250,000	0.126	\$409,500	5	\$650,000	\$3,250,000	0.126	\$409,500
OCS	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
Guideway - TSP and LTP	18	\$35,000	\$630,000	0.081	\$51,030	21	\$35,000	\$735,000	0.081	\$59,535
Guideway -Bus Lanes	3.4	\$3,000,000	\$10,200,000	0.081	\$826,200	3.4	\$3,000,000	\$10,200,000	0.081	\$826,200
Angles	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
ROW Impacts	0	\$548,000	\$548,000	0.070	\$38,360	0	\$581,000	\$581,000	0.070	\$40,670
Maintenance Facility	1	\$1,250,000	\$1,250,000	0.081	\$101,250	1	\$1,250,000	\$1,250,000	0.081	\$101,250
Subtotal			\$16,878,000		\$1,507,340			\$17,216,000		\$1,534,355
Contingency	30%		\$5,063,400		\$452,202	30%		\$5,164,800		\$460,307
Total Alternative Capital Cost			\$21,941,400		\$1,959,542			\$22,380,800		\$1,994,662

- Stations Station cost include all costs associated with the stopping places for this mode, platforms, shelters, signage, furniture, real time
- Vehicles Vehicles costs include the typical cost of the type of vehicle proposed for this technology.
- OCS OCS includes all costs associated with the overhead contact system including wire, poles, substations.
- Guideway Guideway includes the cost of adding additional lanes, queue jump lanes, bus priority in the case of BRT, track and transit priority for LRT and towers, cable and drivers for cableway. BRT, track and transit priority for LRT and towers, cable and drivers for Assume exclusive guideway from Wall Ave. to 26th and Wash., mixed traffic from Wash to Harrison on 26th St. and exclusive guideway 26th to 36th St. on Harrison.
- Angles Angles include angle stations for cableway only.
- ROW Impacts ROW impacts include traffic modifications, utilities, and property takings. \$6.50 s.f. UDOT quote.
- Maintenance Facility Maintenance facility includes all costs, property, structure and equipment for a maintenance facility for the modes that require one, LRT, streetcar and cableway. BRT assumes the use of existing garages.

Capital Cost Calculation Worksheet

Mode: LRT

Cost Element	Via 23rd					Via 26th				
	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost
Station	5	\$1,000,000	\$5,000,000	0.081	\$405,000	6	\$1,000,000	\$6,000,000	0.081	\$486,000
Vehicles	7	\$3,000,000	\$21,000,000	0.086	\$1,806,000	7	\$3,000,000	\$21,000,000	0.086	\$1,806,000
OCS	4.5	\$1,500,000	\$6,750,000	0.081	\$546,750	4.5	\$1,500,000	\$6,750,000	0.081	\$546,750
Guideway - TSP and LTP	4.5	\$30,000,000	\$135,000,000	0.081	\$10,935,000	4.5	\$30,000,000	\$135,000,000	0.081	\$10,935,000
Guideway -Bus Lanes			\$0	0.081	\$0			\$0	0.081	\$0
Angles	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
ROW Impacts	0	\$608,000	\$608,000	0.070	\$42,560	0	\$598,000	\$598,000	0.070	\$41,860
Maintenance Facility	1	\$6,000,000	\$6,000,000	0.081	\$486,000	1	\$6,000,000	\$6,000,000	0.081	\$486,000
Maintenance Facility Access	0.23	\$7,000,000	\$1,610,000	0.081	\$130,410	0.23	\$7,000,000	\$1,610,000	0.081	\$130,410
Subtotal			\$175,968,000		\$14,351,720			\$176,958,000		\$14,432,020
Contingency	30%		\$52,790,400		\$4,305,516	30%		\$53,087,400		\$4,329,606
Total Alternative Capital Cost			\$228,758,400		\$18,657,236			\$230,045,400		\$18,761,626

- Stations Station cost include all costs associated with the stopping places for this mode, platforms, shelters, signage, furniture, real time
- Vehicles Vehicles costs include the typical cost of the type of vehicle proposed for this technology.
- OCS OCS includes all costs associated with the overhead contact system including wire, poles, substations.
- Guideway Guideway includes the cost of adding additional lanes, queue jump lanes, bus priority in the case of BRT, track and transit priority
- Angles Anles include angle stations for cableway only.
- ROW Impacts ROW impacts include traffic modifications, utilities, and property takings. \$6.50 s.f. UDOT quote.
- Maintenance Facility Maintenance facility includes all costs, property, structure and equipment for a maintenance facility for the modes that require one, LRT, streetcar and cableway. BRT assumes the use of existing garages.
- Maintenance Facility Access Maintenance facility for street car, lrt and cableway would be located at approximately 2150 Street and Wall Ave., 1,200 feet or .23 miles north of the existing Ogden Intermodal Transit Center. Assume \$7.0 million/mi cost to extend OCS and guideway in a railroad corridor. Source: R. Pilgrim TRB.

Capital Cost Calculation Worksheet

Mode: Streetcar

Cost Element	Via 23rd					Via 26th				
	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost
Station	5	\$200,000	\$1,000,000	0.081	\$81,000	6	\$200,000	\$1,200,000	0.081	\$97,200
Vehicles	4	\$2,000,000	\$8,000,000	0.086	\$688,000	4	\$2,000,000	\$8,000,000	0.086	\$688,000
OCS	4.5	\$1,000,000	\$4,500,000	0.081	\$364,500	4.5	\$1,000,000	\$4,500,000	0.081	\$364,500
Guideway - TSP and LTP	4.5	\$13,000,000	\$58,500,000	0.081	\$4,738,500	4.5	\$13,000,000	\$58,500,000	0.081	\$4,738,500
Guideway -Bus Lanes			\$0	0.081	\$0		\$0	\$0	0.081	\$0
Angles	0	\$0	\$0	0.081	\$0	0	\$0	\$0	0.081	\$0
ROW Impacts	0	\$548,000	\$548,000	0.070	\$38,360	0	\$581,000	\$581,000	0.070	\$40,670
Maintenance Facility	1	\$3,000,000	\$3,000,000	0.081	\$243,000	1	\$3,000,000	\$3,000,000	0.081	\$243,000
Maintenance Facility Access	0.23	\$7,000,000	\$1,610,000	0.081	\$130,410	0.23	\$7,000,000	\$1,610,000	0.081	\$130,410
Subtotal			\$77,158,000		\$6,283,770			\$77,391,000		\$6,302,280
Contingency	30%		\$23,147,400		\$1,885,131	30%		\$23,217,300		\$1,890,684
Total Alternative Capital Cost			\$100,305,400		\$8,168,901			\$100,608,300		\$8,192,964

- Stations Station cost include all costs associated with the stopping places for this mode, platforms, shelters, signage, furniture, real time
- Vehicles Vehicles costs include the typical cost of the type of vehicle proposed for this technology.
- OCS OCS includes all costs associated with the overhead contact system including wire, poles, substations.
- Guideway Guideway includes the cost of adding additional lanes, queue jump lanes, bus priority in the case of BRT, track and transit priority
- Angles Angles include angle stations for cableway only.
- ROW Impacts ROW impacts include traffic modifications, utilities, and property takings. \$6.50 s.f. UDOT quote
- Maintenance Facility Maintenance facility includes all costs, property, structure and equipment for a maintenance facility for the modes that require one, LRT, streetcar and cableway. BRT assumes the use of existing garages.
- Maintenance Facility Access Maintenance facility for street car, lrt and cableway would be located at approximately 2150 Street and Wall Ave., 1,200 feet or .23 miles north of the existing Ogden Intermodal Transit Center. Assume \$7.0 million/mi cost to extend OCS and guideway in a railroad corridor (Source: R. Pilgrim TRB.)

OPERATIONS / MAINTENANCE
ESTIMATED BUDGET

OPERATIONS / MAINTENANCE		23 STREET	26 STREET
ANNUAL EXPENSES			
Tram Management Co.		200,000	200,000
Operations Payroll		1,518,744	1,722,831
Insurance - Property / Liability		150,000	150,000
Uniforms		11,190	12,879
Tramway Electric		211,125	211,125
Tramway Fuel		5,630	5,630
Tramway Supplies		56,300	56,300
Security Services		100,000	100,000
Advertising / Promo		250,000	250,000
Legal / Professional		250,000	250,000
Licenses / Permits		20,000	20,000
Office - Expenses		25,000	25,000
Office - Rent / Utilities		30,000	30,000
Office - Supplies		20,000	20,000
Telephone		25,000	25,000
Miscellaneous		20,000	20,000
Operating Expenses	Sub	3,042,988	3,248,765
Maintenance Payroll		753,013	816,350
Parts / Service		348,611	404,205
Maintenance Expenses	Sub	1,101,623	1,220,555
		0	0
O&M Expenses	Total	3,994,612	4,319,320

BRT I

Via 23rd							Via 26th						
Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost	Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost
17.9	12	144	49.4	\$95	\$4,693	\$1,408,014	18.7	12	144	51.6	\$95	\$4,903	\$1,470,942

Operations	Rate	Hours	
Operators	\$22.00	14822	\$326,084
Deadhead etc.	\$22.00	1482	\$32,608
Supervisors	\$27.50	4160	\$114,400
Fringe	39%		\$186,398
Maintenance			
Labor			\$256,027
Parts, fuels, materials			\$148,081
Overhead			
Facilities Maintenance			\$119,644
Telephone & Computer Support			\$33,792
Admin, legal, acct, insur. etc.			\$128,532
Advertising & Customer Service			\$47,170
Security			\$15,277
Total			\$1,408,014

Operations	Rate	Hours	
Operators	\$22.00	15484	\$340,639
Layover, Deadhead etc.	\$22.00	1548	\$34,064
Supervisors	\$27.50	4160	\$114,400
Fringe	39%		\$192,707
Maintenance			
Labor			\$272,124
Parts, fuels, materials			\$157,391
Overhead			
Facilities Maintenance			\$124,991
Telephone & Computer Support			\$35,303
Admin, legal, acct, insur. etc.			\$134,277
Advertising & Customer Service			\$49,278
Security			\$15,768
Total			\$1,470,942

Light Rail

Via 23rd							Via 26th						
Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost	Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost
14.2	15	120	32.7	\$260	\$8,492	\$2,547,480	15.8	15	120	36.3	\$260	\$9,448	\$2,834,520

Operations				Rate	Operations				Rate
	Operators	\$22.00	9798	\$215,556		Operators	\$22.00	10902	\$239,844
	Other Operating personnel	\$22.00	4899	\$107,778		Other Operating personnel	\$22.00	5451	\$119,922
	Supervisors	\$27.50	6240	\$171,600		Supervisors	\$27.50	6240	\$171,600
	Fringe	39%		\$195,004		Fringe	39%		\$209,358
				689938					
Maintenance- Vehcles					Maintenance- Vehcles				
	Labor			\$457,972	0.747436	Labor			\$509,575
	Parts, fuels, materials			\$154,752		Parts, fuels, materials			\$172,189
Maintenance of Way					Maintenance of Way				
	Labor			\$267,111	0.473424	Labor			\$297,208
	Materials, Utilities			\$297,100		Materials, Utilities			\$330,576
Overhead					Overhead				
	Facilities Maintenance			\$196,156		Facilities Maintenance			\$245,186
	Telephone & Computer Support			\$45,855		Telephone & Computer Support			\$51,021
	Admin, legal, acct, insur. etc.			\$167,955		Admin, legal, acct, insur. etc.			\$186,879
	Advertising & Customer Service			\$142,659		Advertising & Customer Service			\$158,733
	Security			\$127,982		Security			\$142,226
	Total			\$2,547,480		Total			\$2,834,318

Streetcar

Via 23rd							Via 26th						
Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost	Running Time	Headway	OW Trips per Day	Service Hours per Day	Cost per Hour	Cost per Day	Annual Cost
14.2	8	204	55.5	\$141	\$7,829	\$2,348,581	15.8	8	204	61.8	\$141	\$8,711	\$2,613,209

Operations				Rate
Operators	\$22.00	16657	\$366,445	
Other Operating personnel	\$22.00	6663	\$146,578	
Supervisors	\$27.50	4160	\$114,400	
Fringe	39%		\$247,205	
Maintenance- Vehcles				
Labor			\$228,986	
Parts, fuels, materials			\$77,376	
Maintence of Way				
Labor			\$267,111	
Materials, Utilities			\$222,825	
Overhead				
Facilities Maintence			\$196,156	
Telephone & Computer Support			\$45,855	
Admin, legal, acct, insur. etc.			\$167,955	
Advertising & Customer Service			\$142,659	
Security			\$125,031	
Total			\$2,348,582	

Operations				Rate
Operators	\$22.00	18533	\$407,735	
Other Operating personnel	\$22.00	7413	\$163,094	
Supervisors	\$27.50	4160	\$114,400	
Fringe	39%		\$269,980	
Maintenance- Vehcles				
Labor			\$254,787	
Parts, fuels, materials			\$81,843	
Maintence of Way				
Labor			\$297,208	
Materials, Utilities			\$247,932	
Overhead				
Facilities Maintence			\$240,470	
Telephone & Computer Support			\$51,021	
Admin, legal, acct, insur. etc.			\$186,879	
Advertising & Customer Service			\$158,733	
Security			\$139,126	
Total			\$2,613,209	

Capital Cost Calculation Worksheet

Mode: ACPM

Cost Element	Via 23rd					Via 26th				
	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost	Units Required	Unit Cost	Total Cost	Annualized Factor	Annualized Cost
Station - Elevated	3	\$2,000,000	\$6,000,000	0.081	\$486,000	4	\$2,000,000	\$8,000,000	0.081	\$648,000
Station - At Grade	2	\$750,000	\$1,500,000	0.081	\$121,500	2	\$750,000	\$1,500,000	0.081	\$121,500
Vehicles	101	\$45,000	\$4,545,000	0.086	\$390,870	101	\$45,000	\$4,545,000	0.086	\$390,870
A/C	101	\$7,500	\$757,500	0.086	\$65,145	101	\$7,500	\$757,500	0.086	\$65,145
OCS	0	\$0	\$0	0.081	\$0		\$0	\$0	0.081	\$0
Guideway - TSP and LTP	4.5	\$4,000,000	\$18,000,000	0.081	\$1,458,000	4.5	\$4,000,000	\$18,000,000	0.081	\$1,458,000
Guideway -Bus Lanes			\$0	0.081	\$0		\$0	\$0	0.081	\$0
Angles	2	\$1,000,000	\$2,000,000	0.081	\$162,000	4	\$1,000,000	\$4,000,000	0.081	\$324,000
ROW Impacts	1	\$42,000	\$42,000	0.070	\$2,940		\$42,000	\$42,000	0.070	\$2,940
Maintenance Facility & Access	1	\$2,000,000	\$2,000,000	0.081	\$162,000	1	\$2,000,000	\$2,000,000	0.081	\$162,000
Subtotal			\$34,844,500		\$2,848,455			\$38,844,500		\$3,172,455
Contingency	30%		\$10,453,350		\$854,537	30%		\$11,653,350		\$951,737
Total Alternative Capital Cost			\$45,297,850		\$3,702,992			\$50,497,850		\$4,124,192

Stations Station cost include all costs associated with the stopping places for this mode, platforms, shelters, signage, furniture, real time

Vehicles Vehicles costs include the typical cost of the type of vehicle proposed for this technology.

Air Conditioning RG Consultants cost estimate: 5/26/2005 Memo. Assume A/C Method 2: \$7,500 per vehicle.

OCS OCS includes all costs associated with the overhead contact system including wire, poles, substations.

Guideway Guideway includes the cost of adding additional lanes, queue jump lanes, bus priority in the case of BRT, track and transit

Angles Angles include angle stations for cableway only.

ROW Impacts ROW impacts include traffic modifications, utilities, and property takings. \$6.50 s.f. UDOT quote

Maintenance Facility & Access Maintenance facility includes all costs, property, structure and equipment for a maintenance facility for the modes that require one, LRT, streetcar and cableway. BRT assumes the use of existing garages and no additional capital cost to access the maintenance facility.

Maintenance facility for street car, lrt and cableway would be located at approximately 2150 Street and Wall Ave., 1,200 feet or .23 miles north of the existing Ogden Intermodal Transit Center. Cost to extend to maintenance facility from main line included.