
4.0 Cost Estimating Assumptions

4.0 Cost Estimation Assumptions

This section provides a summary of the assumptions used to develop capital and operating and maintenance (O&M) costs for the Transport 2020 project.

■ 4.1 Capital Costing Approach

Capital costs for the Transport 2020 Build and Baseline Alternatives were prepared and are reported in the Standard Cost Categories (SCC) worksheet (Rev. 10, May 7, 2007).

Construction cost values used in the Transport 2020 project capital cost estimate were gathered from a number of sources, emphasizing the comparability (e.g., mode, service attributes), geographic basis, and the currency of the information. The sources for unit cost data include:

- Internal consultant team sources;
- Industry publications; and
- Local City of Madison and Wisconsin Department of Transportation construction costs.

The allocated contingency cost used in this estimate was set at 24 percent of the base construction costs. No unallocated contingency was incorporated into the cost estimate. This contingency is sufficient based on the current level of design and given the presence of existing operating infrastructure. Professional services, including engineering/design costs as well as construction-phase engineering and start up costs are estimated at 22.7 percent of the base construction costs.

Baseline costs reflect branded vehicles that would be procured to operate enhanced bus service in the Transit Priority Corridor as well as minor roadway improvements and curb extensions, signal improvements, and an expanded maintenance facility needed to support the increased fleet.

■ 4.2 Standard Cost Categories Worksheet

Capital costs for the Transport 2020 project Build and Baseline alternatives are reported in the Standard Cost Categories (SCC) worksheet. The SCC worksheet is provided at the end of this section and electronically on a CD contained in the front pocket of this submittal.

■ 4.3 O&M Costing Approach

O&M costs for the Transport 2020 Build and Baseline alternatives are based on mode specific resource unit costs and productivity factors. Rates from representative services in the Midwest were utilized, as well as from Metro Transit and the National Transit Database. The O&M costs for the Build and Baseline reflect anticipated fleet and train sizes, as well as the type of rail and bus equipment to be used. Total O&M costs also include administrative, overheads, and other supporting costs. Table 4.1 shows the unit costs for each major O&M cost category in both the Build and Baseline Alternatives.

As certified in the Certification of Planning Methods and Technical Assumptions Template contained in Section 2.0, a fully allocated approach has been utilized to estimate Build and Baseline O&M costs for purposes of calculating cost-effectiveness.

Table 4.1 O&M Unit Costs

Cost Category	Unit Cost (2006 Dollars)	Unit
<i>Bus</i>		
Operator's salaries and wages	\$24.88	Vehicle hour
Other salaries and wages	\$24,940.33	Peak fleet
Fringe benefits	\$28.47	Vehicle hour
Services	\$1,972.77	Peak fleet
Fuels and lubricants	\$0.51	Vehicle mile
Tires and tubes	\$0.02	Vehicle mile
Other materials and supplies	\$0.18	Vehicle mile
Utilities	\$2,860.19	Peak fleet
Casualty and liability costs	\$2,473.88	Peak fleet
Taxes	\$0.00	Vehicle mile
Purchased transportation	\$9.32	Vehicle hour
Miscellaneous expense	\$321.54	Peak fleet
Interest expense	\$1,737.17	Peak fleet
Leases and rentals	\$16,394.75	Transfer centers
<i>Commuter Rail</i>		
Operator labor cost	\$41.75	Train hour
Supervisor labor cost	\$43.63	Train hour
Dispatcher labor cost	\$32.24	Train hour
Other personnel labor cost	\$32.24	Train hour
Maintenance of Way - gates/signals	\$7,585	Track mile
Maintenance of Way - track inspection	\$13,219	Track mile
Maintenance of Way - track materials	\$24,310	Track mile
Maintenance of Way - track equipment	\$14,369	Track mile
Maintenance of Equipment - labor	\$79,458	DMU unit
Maintenance of Equipment - parts	\$57,635	DMU unit
Trackage fee - Union Pacific	\$50,000	Annual
Trackage fee - WSOR	\$200,000	Annual
Cost of fuel	\$3.35	Train mile

Standard Cost Categories for Capital Projects

(Rev.10, May 7, 2007)

10 GUIDEWAY & TRACK ELEMENTS (route miles)

- 10.01 Guideway: At-grade exclusive right-of-way
- 10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)
- 10.03 Guideway: At-grade in mixed traffic
- 10.04 Guideway: Aerial structure
- 10.05 Guideway: Built-up fill
- 10.06 Guideway: Underground cut & cover
- 10.07 Guideway: Underground tunnel
- 10.08 Guideway: Retained cut or fill
- 10.09 Track: Direct fixation
- 10.10 Track: Embedded
- 10.11 Track: Ballasted
- 10.12 Track: Special (switches, turnouts)
- 10.13 Track: Vibration and noise dampening

20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)

- 20.01 At-grade station, stop, shelter, mall, terminal, platform
- 20.02 Aerial station, stop, shelter, mall, terminal, platform
- 20.03 Underground station, stop, shelter, mall, terminal, platform
- 20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.
- 20.05 Joint development
- 20.06 Automobile parking multi-story structure
- 20.07 Elevators, escalators

30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS

- 30.01 Administration Building: Office, sales, storage, revenue counting
- 30.02 Light Maintenance Facility
- 30.03 Heavy Maintenance Facility
- 30.04 Storage or Maintenance of Way Building
- 30.05 Yard and Yard Track

40 SITEWORK & SPECIAL CONDITIONS

- 40.01 Demolition, Clearing, Earthwork
- 40.02 Site Utilities, Utility Relocation
- 40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments
- 40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks
- 40.05 Site structures including retaining walls, sound walls
- 40.06 Pedestrian / bike access and accommodation, landscaping
- 40.07 Automobile, bus, van accessways including roads, parking lots
- 40.08 Temporary Facilities and other indirect costs during construction

50 SYSTEMS

- 50.01 Train control and signals
- 50.02 Traffic signals and crossing protection
- 50.03 Traction power supply: substations
- 50.04 Traction power distribution: catenary and third rail
- 50.05 Communications
- 50.06 Fare collection system and equipment
- 50.07 Central Control

60 ROW, LAND, EXISTING IMPROVEMENTS
60.01 Purchase or lease of real estate
60.02 Relocation of existing households and businesses
70 VEHICLES (number)
70.01 Light Rail
70.02 Heavy Rail
70.03 Commuter Rail
70.04 Bus
70.05 Other
70.06 Non-revenue vehicles
70.07 Spare parts
80 PROFESSIONAL SERVICES
80.01 Preliminary Engineering
80.02 Final Design
80.03 Project Management for Design and Construction
80.04 Construction Administration & Management
80.05 Insurance
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.
80.07 Surveys, Testing, Investigation, Inspection
80.08 Start up
90 UNALLOCATED CONTINGENCY
100 FINANCE CHARGES

Standard Cost Categories for Capital Projects DEFINITIONS		NOTE: The SCC cost breakdown is based on a traditional Design Bid Build model. If your project is Design Build, to the best of your ability, separate construction costs from design, administration, testing, etc. Put all construction costs in 10 through 50. Put design, administration, testing, etc. in <i>80 Professional Services</i> .
(Rev.10, May 7, 2007)		
10 GUIDEWAY & TRACK ELEMENTS (route miles)		<p>Include guideway and track costs for all transit modes (Heavy rail, light rail, commuter rail, BRT, rapid bus, bus, monorail, cable car, etc.) The unit of measure is route miles of guideway, regardless of width. As associated with the guideway, include costs for rough grading, excavation, and concrete base for guideway where applicable. Include all construction materials and labor regardless of whom is performing the work.</p> <p>In your written description of the scope and in supporting graphic diagrams, indicate whether busway or rail track is single, double, triple, relocated, etc. Put guideway and track elements associated with yards in <i>30 Support Facilities</i> below.</p>
10.01	Guideway: At-grade exclusive right-of-way	
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	
10.03	Guideway: At-grade in mixed traffic	
10.04	Guideway: Aerial structure	Include foundation excavation; guideway structures including caissons, columns, bridges, viaducts, cross-overs, fly-overs.
10.05	Guideway: Built-up fill	Include construction of earthen berms.
10.06	Guideway: Underground cut & cover	Include excavation, retaining walls, backfill, underground guideway structure and finishes.
10.07	Guideway: Underground tunnel	Include tunneling by means of a tunnel boring machine, drill blasting, mining, and immersed tube tunneling; tunnel structure and finishes.
10.08	Guideway: Retained cut or fill	Include excavation, retaining walls, backfill, underground guideway structure and finishes.
10.09	Track: Direct fixation	Include rails, connectors.
10.10	Track: Embedded	Include rails, ties; ballast where applicable
10.11	Track: Ballasted	Include rails, ties and ballast.
10.12	Track: Special (switches, turnouts)	Include transitional curves.
10.13	Track: Vibration and noise dampening	Include upcharge for vib/noise dampening to any track condition above.
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		As associated with stations, include costs for rough grading, excavation, station structures, enclosures, finishes, equipment; mechanical and electrical components including HVAC, ventilation shafts and equipment, station power, lighting, public address/customer information system, safety systems such as fire detection and prevention, security surveillance, access control, life safety systems, etc. Include all construction materials and labor regardless of whom is performing the work.
		Put guideway and track associated with stations in <i>10 Guideway & Track Elements</i> above.
20.01	At-grade station, stop, shelter, mall, terminal, platform	
20.02	Aerial station, stop, shelter, mall, terminal, platform	Include station structures including caissons, columns, platforms, superstructures, etc.
20.03	Underground station, stop, shelter, mall, terminal, platform	Include retaining walls, backfill, structure.
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	
20.05	Joint development	Per FTA's Joint Development Guidance, "Joint development is any income-producing activity with a transit nexus related to a real estate asset in which FTA has an interest. . . Joint development projects are commercial, residential, industrial, or mixed-use developments that are induced by or enhance the effectiveness of transit projects. . ." See http://www.fta.dot.gov/17973_18027_ENG_HTML.htm
20.06	Automobile parking multi-story structure	Include retaining walls, backfill, structure.
20.07	Elevators, escalators	
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		As associated with support facilities, include costs for rough grading, excavation, support structures, enclosures, finishes, equipment; mechanical and electrical components including HVAC, ventilation shafts and equipment, facility power, lighting, public address system, safety systems such as fire detection and prevention, security surveillance, access control, life safety systems, etc. Include fueling stations. Include all construction materials and labor regardless of whom is performing the work.
		Where a support facility shares the structure with a station, its cost may be included with station cost. Identify this with a note.
		Except for guideway and track associated with a yard, include all guideway and track costs associated with support facilities in <i>10 Guideway & Track Elements</i> above.
30.01	Administration Building: Office, sales, storage, revenue counting	
30.02	Light Maintenance Facility	Include service, inspection, and storage facilities and equipment.
30.03	Heavy Maintenance Facility	Include heavy maintenance and overhaul facilities and equipment.
30.04	Storage or Maintenance of Way Building	
30.05	Yard and Yard Track	Include yard construction, guideway and track associated with yard.

40 SITEWORK & SPECIAL CONDITIONS		Include all construction materials and labor regardless of whom is performing the work.
40.01	Demolition, Clearing, Earthwork	Include project-wide clearing, demolition and fine grading.
40.02	Site Utilities, Utility Relocation	Include all site utilities - storm, sewer, water, gas, electric.
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	Include underground storage tanks, fuel tanks, other hazardous materials and treatments, etc.
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Include other environmental mitigation not listed.
40.05	Site structures including retaining walls, sound walls	
40.06	Pedestrian / bike access and accommodation, landscaping	Include sidewalks, paths, plazas, landscape, site and station furniture, site lighting, signage, public artwork, bike facilities, permanent fencing.
40.07	Automobile, bus, van accessways including roads, parking lots	Include all on-grade paving.
40.08	Temporary Facilities and other indirect costs during construction	As a general rule and to the extent possible, appropriately allocate indirect costs among the construction costs in Categories 10 through 50. Where that is not possible, include in <i>40.08 Temporary Facilities</i> costs for mobilization, demobilization, phasing; time and temporary construction associated with weather (heat, rain, freezing, etc.); temporary power and facilities; temporary construction, easements, and barriers for storm water pollution prevention, temporary access and to mitigate construction impacts; project and construction supervision; general conditions, overhead, profit. NOTE: Include contractor's general liability and other insurance related to construction such as builder's risk in Cats. 10 - 50, not in 80 Professional Services below.
50 SYSTEMS		Include all construction materials and labor regardless of whom is performing the work.
50.01	Train control and signals	
50.02	Traffic signals and crossing protection	Include signal prioritization at intersections.
50.03	Traction power supply: substations	
50.04	Traction power distribution: catenary and third rail	
50.05	Communications	Include passenger information systems at stations and on vehicles (real time travel information; static maps and schedules). Include equipment to allow communications among vehicles and with central control.
50.06	Fare collection system and equipment	Include fare sales and swipe machines, fare counting equipment.
50.07	Central Control	
Construction Subtotal (10 - 50)		

60 ROW, LAND, EXISTING IMPROVEMENTS		Include professional services associated with the real estate component of the project. These costs may include agency staff oversight and administration, real estate and relocation consultants, legal counsel, court expenses, insurance, etc.
60.01	Purchase or lease of real estate	If the value of right-of-way, land, and existing improvements is to be used as local match to the Federal funding of the project, include the total cost on this line item. In backup documentation, separate cost for land from cost for improvements. Identify whether items are leased, purchased or acquired through payment or for free. Include the costs for permanent surface and subsurface easements, trackage rights, etc.
60.02	Relocation of existing households and businesses	In compliance with Uniform Relocation Act.
70 VEHICLES (number)		Include professional services associated with the vehicle component of the project. These costs may include agency staff oversight and administration, vehicle consultants, design and manufacturing contractors, legal counsel, warranty and insurance costs, etc.
70.01	Light Rail	Include light rail and streetcar rail using electric, diesel or other power supply.
70.02	Heavy Rail	
70.03	Commuter Rail	Include locomotives (diesel, electric, or other), trailer cars, self-propelled multiple units (EMU electric or DMU diesel, or other power supply)
70.04	Bus	Includes "rubber-tired" buses and trolleys including new, used, historic replica, articulated, using electric, diesel, dual-power, or other power supply.
70.05	Other	Include Vans, Sedan/Station Wagon, Cable Car, People Mover, Monorail, Car/Inclined Railway, Ferry Boat, Transferred Vehicle
70.06	Non-revenue vehicles	
70.07	Spare parts	
80 PROFESSIONAL SERVICES		See Cats. 60 and 70 for professional services related to ROW/Land and Vehicles.
80.01	Preliminary Engineering	Cat. 80 includes all professional, technical and management services (and related professional liability insurance costs) related to the design and construction of fixed infrastructure (Cats. 10 - 50) during the preliminary engineering, final design, and construction phases of the project. This includes environmental work, design, engineering and architectural services; specialty services such as safety or security analyses; value engineering, risk assessment, cost estimating, scheduling, Before and After studies, ridership modeling and analyses, auditing, legal services, administration and management, etc. by agency staff or outside consultants. As required, use back-up worksheets to track detailed costs within each of the line items. <i>(Note that costs for alternatives analysis and NEPA work done before FTA approval to enter preliminary engineering (PE), regardless of funding source, are not included in an FFGA and therefore, should not be included in the Standard Cost Category worksheets. For example, on one and the same grant, costs incurred prior to FTA approval to enter PE should be omitted from these worksheets whereas costs incurred after FTA approval to enter PE should be included.)</i>
80.02	Final Design	
80.03	Project Management for Design and Construction	
80.04	Construction Administration & Management	
80.05	Insurance	
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	
80.07	Surveys, Testing, Investigation, Inspection	
80.08	Start up	
Subtotal (10 - 80)		
90 UNALLOCATED CONTINGENCY		Includes unallocated contingency, project reserves. Document allocated contingencies for individual line items on the Main worksheets.
Subtotal (10 - 90)		
100 FINANCE CHARGES		Include finance charges expected to be paid by the project sponsor/grantee prior to either the completion of the project or the fulfillment of the New Starts funding commitment, whichever occurs later in time. Finance charges incurred after this date should not be included in Total Project Cost. (See FFGA Circular FTA C5200.1A Chapter III for additional information.) Derive finance charges from the New Starts project's financial plan, based on an analysis of the sources and uses of funds. The amount and type of debt financing required and revenues available determine the finance charges. By year, compute finance charges in year-of-expenditure (YOE) dollars. On the Inflation Calculation to YOE worksheet enter the finance charges for the appropriate years.
Total Project Cost (10 - 100)		

14-Series TEAM Scopes / Activity Line Items

Required for all grants that serve a Capital Project

(Rev.10, May 7, 2007)

<p>1. HOW DO THE SCC AND TEAM RELATE? TEAM is for grants management. Many grants can serve a capital project -- e.g. CMAQ, 5307, 5309, etc. The Standard Cost Categories (SCC) are for cost management, day to day as well as at important milestones.</p> <p>To manage capital project costs use the SCC worksheets, back up sheets, detailed cost estimates, etc. At important milestones, "paperclip" the SCC worksheets to the applicable grants in TEAM.</p> <p>TEAM and the SCC support each other but TEAM doesn't duplicate the level of information in the SCC. The idea is to keep grants budgets simple and focus on cost management.</p> <p>2. WHEN SHOULD I USE THE 14-SERIES? Use it for capital projects. For New Starts project, use it from the very first grant that funds Preliminary Engineering, and include all grants issued through the FFGA; these grants may be small or large and may derive funding from diverse sources such as CMAQ, 5307, 5309 Fixed Guideway Mod, 5309 New Starts, Federal Non-Transportation funding from HUD, Defense, etc.</p> <p>3. HOW IS THE 14-SERIES ORGANIZED AND WHY? The 14-Series has only 10 pairs of Scopes and ALIs. This is intentionally simple. Do not mix and match Scopes and ALIs or change the standard text. For example, put only guideway costs under the Guideway Scope. If kept simple, the information will be correct and will produce a reliable database at the program-wide level.</p> <p>4. WHAT'S WITH THE VEHICLES? For now, use 14-Series SCOPE (14070) and 13-Series ALIs.</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;">14010 GUIDEWAY & TRACK ELEMENTS</td> <td></td> </tr> <tr> <td>140110 Guideway & Track Elements</td> <td></td> </tr> <tr> <td style="background-color: #e0e0e0;">14020 STATIONS, STOPS, TERMINALS, INTERMODAL</td> <td></td> </tr> <tr> <td>140220 Stations, Stops, Terminals, Intermodal</td> <td></td> </tr> <tr> <td style="background-color: #e0e0e0;">14030 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN BLDGS</td> <td></td> </tr> <tr> <td>140330 Support Facilities: Yards, Shops, Admin Bldgs</td> <td></td> </tr> <tr> <td style="background-color: #e0e0e0;">14040 SITEWORK & SPECIAL CONDITIONS</td> <td></td> </tr> <tr> <td>140440 Sitework & Special Conditions</td> <td style="border: 1px solid black; text-align: center;">Engineering & Design 13.11.XX</td> </tr> <tr> <td style="background-color: #e0e0e0;">14050 SYSTEMS</td> <td></td> </tr> <tr> <td>140550 Systems</td> <td style="border: 1px solid black; text-align: center;">Purchase - Replacement 13.12.XX</td> </tr> <tr> <td style="background-color: #e0e0e0;">14060 ROW, LAND, EXISTING IMPROVEMENTS</td> <td></td> </tr> <tr> <td>140660 ROW, Land, Existing Improvements</td> <td style="border: 1px solid black; text-align: center;">Purchase - Expansion 13.13.XX</td> </tr> <tr> <td style="background-color: #e0e0e0;">14070 VEHICLES</td> <td></td> </tr> <tr> <td>13____ Note! 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.24 Commuter Rail Locomotive Diesel																																																																												
.25 Commuter Rail Locomotive Electric																																																																												
.26 Commuter Rail Cars Used																																																																												
.27 Commuter Rail Locomotive Used																																																																												
.28 Commuter Rail Self Propelled - Diesel																																																																												
.30 Cable Car																																																																												
.31 People Mover																																																																												
.32 Car, Incline Railway																																																																												
.33 Ferry Boats																																																																												
.39 Transferred Vehicles																																																																												
.40 Spare Parts/Assoc.Capital																																																																												
/ Maintenance Items																																																																												

PROJECT DESCRIPTION - BUILD ALTERNATIVE

(Rev.10, May 7, 2007)

City of Madison, WI
 Transport 2020, Madison, WI
 Application for PE

Today's Date **5/1/08**

Describe elements of the project and/or the entire project to explicate the unit costs shown on the Main Worksheet. As an example -- a project may include ten miles of on-grade guideway and one-quarter mile of aerial structure for a river crossing. Because of its uniqueness within the project, the aerial component (two-tracks) may have a high unit cost when compared with the unit cost for a ten-mile long two-track aerial structure. The unit cost for the longer aerial structure benefits from the economy of scale.

Mention precedents and reference points used in the development of costs for this project. Mention other aspects of this project that were important considerations in estimating costs. These could include the physical context and site constraints; design parameters; institutional, contracting and procurement conditions; project schedule, etc.

Below, expand lines and delete lines as required to accommodate your commentary.

10 GUIDEWAY & TRACK ELEMENTS (route miles)

10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	The commuter rail system will be constructed almost entirely within an existing railroad right of way from 12/14 in Middleton to Reiner Rd on the west side of Sun Prairie. Most of the existing rail facilities are single track. The frequent service provided in the operating plan requires double track from Hill Farms station to Commercial Ave, just west of the Fair Oaks station, a distance of 8.5 miles. The construction of a second track will require improvements to the grade such as cut/fill and drainage. The right of way provides frequent grade crossings for automotive and pedestrian traffic.
10.04	Guideway: Aerial structure	Several locations require new bridge structures including N. Park St, Yahara River, Starkweather Creek (two sites). The Yahara River structure will be a relatively costly long span two track steel through girder structure due to site conditions. The others are relatively short span single track structures.
10.11	Track: Ballasted	Work includes construction of 18.3 mi of track (136 CWR on timber ties), 6.7 mi of rail replacement with 136 CWR, 6.7 mi of 33% tie replacement and surfacing, and reconstruction of 89 single track grade crossing surfaces.
10.12	Track: Special (switches, turnouts)	22 mainline # 15 turnouts (generally arranged as crossovers), 10 mainline # 10 turnouts (generally for industry use)

20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)

20.01	At-grade station, stop, shelter, mall, terminal, platform	The system includes 17 stations, all of which are configured as double outside platforms, except three which are single platform stations. The platforms will be constructed as 200 ft by 10 ft asphalt surfaces with minimal facilities including two ticket vending machines per platform, electric service, lighting, communications (CCTV, PA, VMS), benches, and signage. Platforms are generally accessible by adjacent streets. The cost of the POP fare collection system is included in the station estimate. Details of ADA access shall be determined in preliminary engineering.
20.07	Elevators, escalators	Monona Ter station requires vertical access including elevator, stairway and two escal. per platform.

30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS

30.01	Administration Building: Office, sales, storage, revenue counting	Admin facilities are not included in the capital cost. The function will be performed in exis. facilities.
30.03	Heavy Maintenance Facility	An allowance is provided for a heavy maintenance facility and yard. Design has not been addressed at this stage. A potential site is available at the WSOR yard at Johnson St.
30.04	Storage or Maintenance of Way Building	MOW and crew layover facilities are provided at 12/14 on the west and Reiner Rd on the east. The Reiner Rd site includes overnight storage tracks and cleaning facilities.

40 SITEWORK & SPECIAL CONDITIONS

40.07	Automobile, bus, van accessways including roads, parking lots	Park and ride facilities are provided at four station sites: Middleton 12/14 - 140 spaces, Hill Farms - 300 spaces, Fair Oaks - 250 spaces, Reiner Rd - 415 spaces Three of the four sites include bus and taxi access for intermodal connectivity.
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50 SYSTEMS

50.01	Train control and signals	The existing railroad operates under track warrant control. A modern centralized traffic control system with wayside signals is required to support the planned operation. The estimate includes interlockings and automatic block signals as depicted in a conceptual block layout on the plans.
50.02	Traffic signals and crossing protection	Estimate provides 4Q or channelized 2Q gates with CWT for 56 crossings under a whistle ban.
50.05	Communications	Station cost includes CCTV, PA, VMS. This line is an allowance for system wide facilities.
50.06	Fare collection system and equipment	Included in station cost.
50.07	Central Control	Included in Communications cost.

Construction Subtotal (10 - 50)

60 ROW, LAND, EXISTING IMPROVEMENTS

60.01	Purchase or lease of real estate	A total of 56 acres of property are required for stations, parking, MOW and layover facilities. Requirements for the maintenance facility have not been defined. Relocations are not expected.
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70 VEHICLES (number)

70.03	Commuter Rail	The operating plan and ridership estimate require a total of 9 operating vehicles with 2 spares. Vehicles are anticipated to operate in single car consists and provide a nominal capacity of 125 seats and room for 90 standing passengers. The vehicles are expected to be low floor, non-FRA compliant DMUs operating under temporal separation with other services. At least two suppliers are currently providing such vehicles in the US market at the estimated price.
70.06	Non-revenue vehicles	Not included in capital costs.
70.07	Spare parts	Included in vehicle estimate.

80 PROFESSIONAL SERVICES

80.01	Preliminary Engineering	Estimated at 3.5% of Sum Categories 10-50.
80.02	Final Design	Estimated at 7.0% of Sum Categories 10-50.
80.03	Project Management for Design and Construction	Estimated at 1.0% of Sum Categories 10-50.
80.04	Construction Administration & Management	Estimated at 8.0% of Sum Categories 10-50.
80.05	Insurance	Not included. Assumed to be included in construction costs.
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	Estimated at 1.0% of Sum Categories 10-50.
80.07	Surveys, Testing, Investigation, Inspection	Estimated at 0.2% of Sum Categories 10-50.
80.08	Start up	Estimated at 2.0% of Sum Categories 10-50.

Subtotal (10 - 80)

90 UNALLOCATED CONTINGENCY

Subtotal (10 - 90)

100 FINANCE CHARGES

Total Project Cost (10 - 100)

Allocated Contingency as % of Base Yr Dollars w/o Cont.
 Unallocated Contingency as % of Subtotal (10 - 80)
 YOE Construction Cost per Mile (X000)
 YOE Total Project Cost per Mile Not Including Vehicles (X000)
 YOE Total Project Cost per Mile (X000)

ANNUALIZED COST-BUILD ALTERNATIVE

(Rev.10, May 7, 2007)

City of Madison, WI

Today's Date **5/1/08**

Transport 2020, Madison, WI

Yr of Base Year \$ 2007

Application for PE

Yr of Revenue Ops 2015

	Quantity	Total Base Year Dollars (X000)	Cat. 80 Prof. Svc. spread proportionally over Cats. 10 - 50 (X000)	Spread Cat. 90 Unalloc. Cont. according to perceived risks (X000)	Revised Total Base Year Dollars (X000)	Years of Useful Life	Annualization Factor (based on 7% rate) [0.07/1 - (1.07)^- no. yrs]	Annualized Cost (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	16.10	55,874	12,314	0	68,188			5,280
10.01 Guideway: At-grade exclusive right-of-way	0.00	0	0	0	0	125	0.0700	0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	16.00	10,340	2,279	0	12,619	30	0.0806	1,017
10.03 Guideway: At-grade in mixed traffic	0.00	0	0	0	0	20	0.0944	0
10.04 Guideway: Aerial structure	0.10	5,500	1,212	0	6,712	80	0.0703	472
10.05 Guideway: Built-up fill	0.00	0	0	0	0	80	0.0703	0
10.06 Guideway: Underground cut & cover	0.00	0	0	0	0	125	0.0700	0
10.07 Guideway: Underground tunnel	0.00	0	0	0	0	125	0.0700	0
10.08 Guideway: Retained cut or fill	0.00	0	0	0	0	125	0.0700	0
10.09 Track: Direct fixation	0	0	0	0	0	30	0.0806	0
10.10 Track: Embedded	0	0	0	0	0	20	0.0944	0
10.11 Track: Ballasted	35,786	7,887	0	0	43,673	35	0.0772	3,373
10.12 Track: Special (switches, turnouts)	4,248	936	0	0	5,184	30	0.0806	418
10.13 Track: Vibration and noise dampening	0	0	0	0	0	30	0.0806	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	17	19,365	4,268	0	23,633			1,702
20.01 At-grade station, stop, shelter, mall, terminal, platform	17	16,615	3,662	0	20,277	70	0.0706	1,432
20.02 Aerial station, stop, shelter, mall, terminal, platform	0	0	0	0	0	70	0.0706	0
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0	0	125	0.0700	0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0	0	70	0.0706	0
20.05 Joint development	0	0	0	0	0	70	0.0706	0
20.06 Automobile parking multi-story structure	0	0	0	0	0	50	0.0725	0
20.07 Elevators, escalators	2,750	606	0	0	3,356	30	0.0806	270
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	11,322	2,495	0	0	13,817			1,001
30.01 Administration Building: Office, sales, storage, revenue counting	0	0	0	0	0	50	0.0725	0
30.02 Light Maintenance Facility	0	0	0	0	0	50	0.0725	0
30.03 Heavy Maintenance Facility	9,750	2,149	0	0	11,899	50	0.0725	862
30.04 Storage or Maintenance of Way Building	1,572	346	0	0	1,918	50	0.0725	139
30.05 Yard and Yard Track	0	0	0	0	0	80	0.0703	0
40 SITEWORK & SPECIAL CONDITIONS	6,752	1,488	0	0	8,240			778
40.01 Demolition, Clearing, Earthwork	0	0	0	0	0	125	0.0700	0
40.02 Site Utilities, Utility Relocation	0	0	0	0	0	125	0.0700	0
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	0	0	0	0	0	125	0.0700	0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	0	0	0	0	0	125	0.0700	0
40.05 Site structures including retaining walls, sound walls	0	0	0	0	0	80	0.0703	0
40.06 Pedestrian / bike access and accommodation, landscaping	0	0	0	0	0	20	0.0944	0
40.07 Automobile, bus, van accessways including roads, parking lots	6,752	1,488	0	0	8,240	20	0.0944	778
40.08 Temporary Facilities and other indirect costs during construction	0	0	0	0	0	100	0.0701	0
50 SYSTEMS	57,893	12,759	0	0	70,652			5,716
50.01 Train control and signals	30,531	6,729	0	0	37,260	30	0.0806	3,003
50.02 Traffic signals and crossing protection	26,062	5,744	0	0	31,806	30	0.0806	2,563
50.03 Traction power supply: substations	0	0	0	0	0	50	0.0725	0
50.04 Traction power distribution: catenary and third rail	0	0	0	0	0	30	0.0806	0
50.05 Communications	1,300	287	0	0	1,587	20	0.0944	150
50.06 Fare collection system and equipment	0	0	0	0	0	25	0.0858	0
50.07 Central Control	0	0	0	0	0	30	0.0806	0
Construction Subtotal (10 - 50)	151,206	33,325	0	0	184,531			14,477
60 ROW, LAND, EXISTING IMPROVEMENTS	9,621	0	0	0	9,621			674
60.01 Purchase or lease of real estate	9,621	0	0	0	9,621	125	0.0700	674
60.02 Relocation of existing households and businesses	0	0	0	0	0	125	0.0700	0
70 VEHICLES (number)	11	51,800	0	0	51,800			4,445
70.01 Light Rail	0	0	0	0	0	25	0.0858	0
70.02 Heavy Rail	0	0	0	0	0	25	0.0858	0
70.03 Commuter Rail	11	51,800	0	0	51,800	25	0.0858	4,445
70.04 Bus	0	0	0	0	0	12	0.1259	0
70.05 Other	0	0	0	0	0	12	0.1259	0
70.06 Non-revenue vehicles	0	0	0	0	0	12	0.1259	0
70.07 Spare parts	0	0	0	0	0	12	0.1259	0
80 PROFESSIONAL SERVICES		33,325	0	0	33,325			19,595
80.01 Preliminary Engineering		5,152	0	0	5,152			
80.02 Final Design		10,302	0	0	10,302			
80.03 Project Management for Design and Construction		1,471	0	0	1,471			
80.04 Construction Administration & Management		11,774	0	0	11,774			
80.05 Insurance		0	0	0	0			
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		1,471	0	0	1,471			
80.07 Surveys, Testing, Investigation, Inspection		294	0	0	294			
80.08 Start up		2,861	0	0	2,861			
Subtotal (10 - 80)		245,952	33,325	0	245,952			19,595
90 UNALLOCATED CONTINGENCY		0	0	0	0			0
Subtotal (10 - 90)		245,952	33,325	0	245,952			19,595

FUNDING SOURCES BY CATEGORY

(Rev.10, May 7, 2007)

City of Madison, WI

Today's Date **5/1/08**

Transport 2020, Madison, WI

Application for PE

	Cost		Funding Summary			60%		80%					
	YOE Cost (X000)	Double-check Total	Federal 5309 New Starts Funds	Federal Other Funds	Local Funds	Federal 5309 New Starts	State (unused PE Match)	Federal Other (pre-FFGA)	RTA Capital Investment	Federal Other	Local	Federal Other	Local
10 GUIDEWAY & TRACK ELEMENTS (route miles)	73,841	73,841	44,305	0	29,537	44,305	0	0	29,537				
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	25,592	25,592	15,355	0	10,237	15,355	0	0	10,237				
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	14,744	14,744	8,846	0	5,898	8,846	0	0	5,898				
40 SITEWORK & SPECIAL CONDITIONS	8,923	8,923	5,354	0	3,569	5,354	0	0	3,569				
50 SYSTEMS	77,991	77,991	46,795	0	31,196	46,795	0	0	31,196				
60 ROW, LAND, EXISTING IMPROVEMENTS	12,228	12,228	7,337	0	4,891	7,337	0	0	4,891				
70 VEHICLES (number)	69,125	69,125	41,475	0	27,650	41,475	0	0	27,650				
80 PROFESSIONAL SERVICES	41,942	41,942	9,790	15,375	16,777	9,790	1,250	15,375	15,527				
90 UNALLOCATED CONTINGENCY	0	0	0	0	0	0	0	0	0				
100 FINANCE CHARGES	12,718	12,718	7,631	0	5,087	7,631	0	0	5,087				
Total Project Cost (10 - 100)	337,106	337,106	186,888	15,375	134,842	186,888	1,250	15,375	133,592	0	0	0	0
Percentage of Total Project Cost	100%		55.4%	4.6%	40.0%	55.4%	0.4%	4.6%	39.6%	0.0%	0.0%	0.0%	0.0%
			55.4%	44.6%									
			100.00%										

FUNDING SOURCES BY YEAR

(Rev.10, May 7, 2007)

City of Madison, WI

Today's Date **5/1/08**

Transport 2020, Madison, WI

Application for PE

			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Project Cost In YOE Dollars Below insert funding sources and amounts for each year	337,106	double check	0	0	0	0	0	0	0	0	0	4,123	5,022	10,073	105,224	116,598	96,065	0	0	0	0	0	0
Federal 5309 New Starts	186,888	187,575									0	892	7,238	22,967	74,570	81,485	336	88	0	0	0	0	0
Local	134,842	143,942									-2,947	589	-2,216	-12,894	30,655	35,113	95,729	-88	0	0	0	0	0
Federal Other	15,375	5,588									2,947	2,642	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	337,106	337,106	0	0	0	0	0	0	0	0	0	4,123	5,022	10,073	105,224	116,598	96,065	0	0	0	0	0	0

MAIN WORKSHEET - BASELINE ALTERNATIVE

(Rev.10, May 7, 2007)

City of Madison, WI

Today's Date **5/1/08**

Transport 2020, Madison, WI

Yr of Base Year \$ **2007**

Application for PE

Yr of Revenue Ops **2015**

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	Baseline Alternative Cost Parameters (X000) see New Starts Reporting Instructions for additional info
10 GUIDEWAY & TRACK ELEMENTS (route miles)	14.00	2,120	400	2,520	\$ 180	13%	6%	
10.01 Guideway: At-grade exclusive right-of-way				0				
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0				1040/route mile
10.03 Guideway: At-grade in mixed traffic	14.00	2,120	400	2,520	\$ 180			1040/route mile
10.04 Guideway: Aerial structure				0				
10.05 Guideway: Built-up fill				0				
10.06 Guideway: Underground cut & cover				0				
10.07 Guideway: Underground tunnel				0				
10.08 Guideway: Retained cut or fill				0				
10.09 Track: Direct fixation				0				
10.10 Track: Embedded				0				
10.11 Track: Ballasted				0				
10.12 Track: Special (switches, turnouts)				0				
10.13 Track: Vibration and noise dampening				0				
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	69	3,490	900	4,390	\$ 64	22%	10%	
20.01 At-grade station, stop, shelter, mall, terminal, platform	67	3,350	800	4,150	\$ 62			208/station
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				
20.03 Underground station, stop, shelter, mall, terminal, platform				0				
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	2	140	100	240	\$ 120			
20.05 Joint development				0				
20.06 Automobile parking multi-story structure				0				
20.07 Elevators, escalators				0				
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	14.00	0	0	0	\$ -	0%	0%	
30.01 Administration Building: Office, sales, storage, revenue counting				0				
30.02 Light Maintenance Facility				0				
30.03 Heavy Maintenance Facility				0				
30.04 Storage or Maintenance of Way Building				0				
30.05 Yard and Yard Track				0				
40 SITEWORK & SPECIAL CONDITIONS	14.00	5,194	200	5,394	\$ 385	27%	12%	
40.01 Demolition, Clearing, Earthwork				0				
40.02 Site Utilities, Utility Relocation				0				
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				0				
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				0				
40.05 Site structures including retaining walls, sound walls				0				
40.06 Pedestrian / bike access and accommodation, landscaping				0				
40.07 Automobile, bus, van accessways including roads, parking lots		5,194	200	5,394				5.2/on-grade space
40.08 Temporary Facilities and other indirect costs during construction				0				
50 SYSTEMS	14.00	5,935	1,500	7,435	\$ 531	38%	17%	
50.01 Train control and signals				0				
50.02 Traffic signals and crossing protection		1,650	500	2,150				26/intersection
50.03 Traction power supply: substations				0				
50.04 Traction power distribution: catenary and third rail				0				
50.05 Communications		4,285	1,000	5,285				12.5/bus and 12.5/sign
50.06 Fare collection system and equipment				0				10.4/bus
50.07 Central Control				0				15.6-26 /bus
Construction Subtotal (10 - 50)	14.00	16,739	3,000	19,739	\$ 1,410	100%	45%	
60 ROW, LAND, EXISTING IMPROVEMENTS	14.00	8,300	1,850	10,150	\$ 725		23%	
60.01 Purchase or lease of real estate		6,300	1,350	7,650				
60.02 Relocation of existing households and businesses		2,000	500	2,500				
70 VEHICLES (number)	9	6,840	300	7,140	\$ 793		16%	
70.01 Light Rail				0				
70.02 Heavy Rail				0				
70.03 Commuter Rail				0				
70.04 Bus	9	6,840	300	7,140	\$ 793			416 conventional or 676 articulated bus
70.05 Other				0				
70.06 Non-revenue vehicles				0				
70.07 Spare parts				0				
80 PROFESSIONAL SERVICES	14.00	3,799	1,390	5,189	\$ 371	26%	12%	Max 35%*Const.Cost
80.01 Preliminary Engineering		586	160	746				
80.02 Final Design		1,172	400	1,572				
80.03 Project Management for Design and Construction		167	200	367				
80.04 Construction Administration & Management		1,339	300	1,639				
80.05 Insurance		0	200	200				
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		167	20	187				
80.07 Surveys, Testing, Investigation, Inspection		33	70	103				
80.08 Start up		335	40	375				
Subtotal (10 - 80)	14.00	35,678	6,540	42,218	\$ 3,016		95%	
90 UNALLOCATED CONTINGENCY				2,111			5%	Max 5%*Subtotal (10 - 80)
Subtotal (10 - 90)	14.00			44,329	\$ 3,166		100%	
100 FINANCE CHARGES				NA				
Total Project Cost (10 - 100)	14.00			44,329	\$ 3,166		100%	
Total Base Year Cost per Mile Not Including Vehicles (X000)					\$2,656			
Allocated Contingency as % of Base Yr Dollars w/o Cont.				18.33%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				5.92%				
Total Contingency as % of Base Yr Dollars w/o Contingency				24.25%				
Unallocated Contingency as % of Subtotal (10 - 80)				5.00%				

ANNUALIZED COST-BASELINE ALTERNATIVE

(Rev.10, May 7, 2007)

City of Madison, WI

Today's Date **5/1/08**

Transport 2020, Madison, WI

Yr of Base Year \$ 2007

Application for PE

Yr of Revenue Ops 2015

	Quantity	Total Base Year Dollars (X000)	Cat. 80 Prof. Svc. spread proportionally over Cats. 10 - 50 (X000)	Spread Cat. 90 Unalloc. Cont. according to perceived risks (X000)	Revised Total Base Year Dollars (X000)	Years of Useful Life	Annualization Factor (based on 7% rate) [0.07/1 - (1.07)^- no. yrs]	Annualized Cost (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	14.00	2,520	662	800	3,982			376
10.01 Guideway: At-grade exclusive right-of-way	0.00	0	0	0	0	125	0.0700	0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0	0	0	0	30	0.0806	0
10.03 Guideway: At-grade in mixed traffic	14.00	2,520	662	800	3,982	20	0.0944	376
10.04 Guideway: Aerial structure	0.00	0	0	0	0	80	0.0703	0
10.05 Guideway: Built-up fill	0.00	0	0	0	0	80	0.0703	0
10.06 Guideway: Underground cut & cover	0.00	0	0	0	0	125	0.0700	0
10.07 Guideway: Underground tunnel	0.00	0	0	0	0	125	0.0700	0
10.08 Guideway: Retained cut or fill	0.00	0	0	0	0	125	0.0700	0
10.09 Track: Direct fixation		0	0	0	0	30	0.0806	0
10.10 Track: Embedded		0	0	0	0	20	0.0944	0
10.11 Track: Ballasted		0	0	0	0	35	0.0772	0
10.12 Track: Special (switches, turnouts)		0	0	0	0	30	0.0806	0
10.13 Track: Vibration and noise dampening		0	0	0	0	30	0.0806	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	69	4,390	1,154	500	6,044			427
20.01 At-grade station, stop, shelter, mall, terminal, platform	67	4,150	1,091	500	5,741	70	0.0706	405
20.02 Aerial station, stop, shelter, mall, terminal, platform	0	0	0	0	0	70	0.0706	0
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0	0	125	0.0700	0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	2	240	63		303	70	0.0706	21
20.05 Joint development		0	0	0	0	70	0.0706	0
20.06 Automobile parking multi-story structure		0	0	0	0	50	0.0725	0
20.07 Elevators, escalators		0	0	0	0	30	0.0806	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		0	0	200	200			14
30.01 Administration Building: Office, sales, storage, revenue counting		0	0	0	0	50	0.0725	0
30.02 Light Maintenance Facility		0	0	200	200	50	0.0725	14
30.03 Heavy Maintenance Facility		0	0	0	0	50	0.0725	0
30.04 Storage or Maintenance of Way Building		0	0	0	0	50	0.0725	0
30.05 Yard and Yard Track		0	0	0	0	80	0.0703	0
40 SITEWORK & SPECIAL CONDITIONS		5,394	1,418	200	7,012			662
40.01 Demolition, Clearing, Earthwork		0	0	0	0	125	0.0700	0
40.02 Site Utilities, Utility Relocation		0	0	0	0	125	0.0700	0
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0	0	0	125	0.0700	0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		0	0	0	0	125	0.0700	0
40.05 Site structures including retaining walls, sound walls		0	0	0	0	80	0.0703	0
40.06 Pedestrian / bike access and accommodation, landscaping		0	0	0	0	20	0.0944	0
40.07 Automobile, bus, van accessways including roads, parking lots		5,394	1,418	200	7,012	20	0.0944	662
40.08 Temporary Facilities and other indirect costs during construction		0	0	0	0	100	0.0701	0
50 SYSTEMS		7,435	1,955	0	9,390			849
50.01 Train control and signals		0	0	0	0	30	0.0806	0
50.02 Traffic signals and crossing protection		2,150	565	0	2,715	30	0.0806	219
50.03 Traction power supply: substations		0	0	0	0	50	0.0725	0
50.04 Traction power distribution: catenary and third rail		0	0	0	0	30	0.0806	0
50.05 Communications		5,285	1,389	0	6,674	20	0.0944	630
50.06 Fare collection system and equipment		0	0	0	0	25	0.0858	0
50.07 Central Control		0	0	0	0	30	0.0806	0
Construction Subtotal (10 - 50)		19,739	5,189	1,700	26,628			2,328
60 ROW, LAND, EXISTING IMPROVEMENTS		10,150		0	10,150			711
60.01 Purchase or lease of real estate		7,650		0	7,650	125	0.0700	536
60.02 Relocation of existing households and businesses		2,500		0	2,500	125	0.0700	175
70 VEHICLES (number)	9	7,140		411	7,551			951
70.01 Light Rail	0	0		0	0	25	0.0858	0
70.02 Heavy Rail	0	0		0	0	25	0.0858	0
70.03 Commuter Rail	0	0		0	0	25	0.0858	0
70.04 Bus	9	7,140		411	7,551	12	0.1259	951
70.05 Other	0	0		0	0	12	0.1259	0
70.06 Non-revenue vehicles	0	0		0	0	12	0.1259	0
70.07 Spare parts	0	0		0	0	12	0.1259	0
80 PROFESSIONAL SERVICES		5,189						
80.01 Preliminary Engineering		746						
80.02 Final Design		1,572						
80.03 Project Management for Design and Construction		367						
80.04 Construction Administration & Management		1,639						
80.05 Insurance		200						
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		187						
80.07 Surveys, Testing, Investigation, Inspection		103						
80.08 Start up		375						
Subtotal (10 - 80)		42,218						
90 UNALLOCATED CONTINGENCY		2,111						
Subtotal (10 - 90)		44,329	5,189	2,111	44,329			3,989

Major Capital Project Costs - By Segment

(Rev.10, May 7, 2007)

Project	Transport 2020	Today's Date	12/31/2007	
Location	Madison, WI	Yr of Base Year Dollars	2007	
	Number of Route Miles in the Segment	16.1	Number of Stations	17

Segment No. 1 of 1

(attach plan of segment and typical sections through segment, along with cost estimate per typical section)

	Low costs in Base Yr (X\$000) <i>for potential cost savings*</i>	"Most Likely" cost estimate in Base Yr (X\$000)	High costs in Base Yr Dollars (X\$000) <i>for potential cost increases*</i>
10 GUIDEWAY & TRACK ELEMENTS (route miles)	\$ 38,000	\$ 47,762	\$ 55,874
10.01 Guideway: At-grade exclusive right-of-way			
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	\$ 7,000	\$ 9,400	\$ 10,340
10.03 Guideway: At-grade in mixed traffic			
10.04 Guideway: Aerial structure	\$ 4,000	\$ 5,000	\$ 5,500
10.05 Guideway: Built-up fill			
10.06 Guideway: Underground cut & cover			
10.07 Guideway: Underground tunnel			
10.08 Guideway: Retained cut or fill			
10.09 Track: Direct fixation			
10.10 Track: Embedded			
10.11 Track: Ballasted	\$ 24,000	\$ 29,822	\$ 35,786
10.12 Track: Special (switches, turnouts)	\$ 3,000	\$ 3,540	\$ 4,248
10.13 Track: Vibration and noise dampening			
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	\$ 14,000	\$ 16,346	\$ 19,365
20.01 At-grade station, stop, shelter, mall, terminal, platform	\$ 12,000	\$ 13,846	\$ 16,615
20.02 Aerial station, stop, shelter, mall, terminal, platform			
20.03 Underground station, stop, shelter, mall, terminal, platform			
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.			
20.05 Joint development			
20.06 Automobile parking multi-story structure			
20.07 Elevators, escalators	\$ 2,000	\$ 2,500	\$ 2,750
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	\$ 8,000	\$ 8,810	\$ 11,322
30.01 Administration Building: Office, sales, storage, revenue counting			
30.02 Light Maintenance Facility			
30.03 Heavy Maintenance Facility	\$ 7,000	\$ 7,500	\$ 9,750
30.04 Storage or Maintenance of Way Building	\$ 1,000	\$ 1,310	\$ 1,572
30.05 Yard and Yard Track			
40 SITEWORK & SPECIAL CONDITIONS	\$ 4,500	\$ 5,194	\$ 6,752
40.01 Demolition, Clearing, Earthwork			
40.02 Site Utilities, Utility Relocation			
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments			
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks			
40.05 Site structures including retaining walls, sound walls			
40.06 Pedestrian / bike access and accommodation, landscaping			
40.07 Automobile, bus, van accessways including roads, parking lots	\$ 4,500	\$ 5,194	\$ 6,752
40.08 Temporary Facilities and other indirect costs during construction			
60 ROW, LAND, EXISTING IMPROVEMENTS	\$ 6,000	\$ 7,401	\$ 9,621
60.01 Purchase or lease of real estate	\$ 6,000	\$ 7,401	\$ 9,621
60.02 Relocation of existing households and businesses			
TOTAL SEGMENT COST	\$ 70,500	\$ 85,513	\$ 102,934
<p>The conceptual design work performed to date is sufficient to provide a relatively high level of certainty to the estimate quantities for civil elements of the locally preferred alternative. To a great extent, this is facilitated by the existance of the current railroad right of way. In recent years material prices have shown dramatic increases due to increasing demand for basic commodities such as steel and concrete in developing countries. Coupled with the recent decline in the value of the dollar, a significant risk exists that the unit costs will rise significantly from those used in the base estimate. However, there also exists some likelihood of a recession or period of low growth in the US of the next few years, which could serve to depress the prices charged by suppliers and contractors.</p>		<p>Using costs from this column, total <i>all</i> segments and insert into Main Worksheet Base Yr Dollars Total (X\$000)</p>	

Major Capital Project Costs - Project-wide				(Rev.10, May 7, 2007)	
Project	Transport 2020			Today's Date	12/31/2007
Location	Madison, WI			Yr of Base Year Dollars	2007
Total Number of Route Miles in Project			16.1	Number of Stations	17
Project-wide Costs					
			Low costs in	"Most Likely" cost	High costs
			Base Yr (X\$000)	estimate in Base Yr	in Base Yr Dollars
			<i>for potential cost</i>	<i>(X\$000)</i>	<i>(X\$000) for potential</i>
			<i>savings*</i>		<i>cost increases*</i>
50 SYSTEMS			\$ 35,500	\$ 44,533	\$ 57,893
50.01 Train control and signals			\$ 20,000	\$ 23,485	\$ 30,531
50.02 Traffic signals and crossing protection			\$ 15,000	\$ 20,048	\$ 26,062
50.03 Traction power supply: substations					
50.04 Traction power distribution: catenary and third rail					
50.05 Communications			\$ 500	\$ 1,000	\$ 1,300
50.06 Fare collection system and equipment					
50.07 Central Control					
70 VEHICLES (number)			\$ 38,500	\$ 40,700	\$ 52,910
70.01 Light Rail					
70.02 Heavy Rail					
70.03 Commuter Rail			\$ 35,000	\$ 37,000	\$ 48,100
70.04 Bus					
70.05 Other					
70.06 Non-revenue vehicles					
70.07 Spare parts					
80 PROFESSIONAL SERVICES			\$ 25,200	\$ 27,840	\$ 33,325
80.01 Preliminary Engineering			\$ 4,000	\$ 4,293	\$ 5,152
80.02 Final Design			\$ 8,000	\$ 8,585	\$ 10,302
80.03 Project Management for Design and Construction			\$ 1,000	\$ 1,226	\$ 1,471
80.04 Construction Administration & Management			\$ 9,000	\$ 9,812	\$ 11,774
80.05 Insurance				\$ -	\$ -
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.			\$ 1,000	\$ 1,226	\$ 1,471
80.07 Surveys, Testing, Investigation, Inspection			\$ 200	\$ 245	\$ 294
80.08 Start up			\$ 2,000	\$ 2,453	\$ 2,861
90 UNALLOCATED CONTINGENCY					
100 FINANCE CHARGES					
TOTAL PROJECT-WIDE COST			\$ 99,200	\$ 113,073	\$ 144,128
<p>The conceptual design work performed to date is sufficient to provide a relatively high level of certainty to the estimate quantities for train control, grade crossing warning systems and vehicles. In recent years material prices have shown dramatic increases due to increasing demand for basic commodities such as steel and concrete in developing countries. Coupled with the recent decline in the value of the dollar, a significant risk exists that the unit costs will rise significantly from those used in the base estimate. This is particularly true for vehicles which include a large European content. However, there also exists some likelihood of a recession or period of low growth in the US of the next few years, which could serve to depress the prices charged by suppliers and contractors. At this stage of the design, it is particularly difficult to estimate the value of professional services. A reasonable range has been offered based on the anticipated construction cost and typical industry benchmarks.</p>			<p>Insert costs from this column into Main Worksheet Base Yr Dollars Total (X\$000)</p>		

Attachment 3
Baseline Cost Estimate

Project Sponsor Name
Project Name

Table 1 - BCE by Standard Cost Category

<i>Applicable Line Items Only</i>	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	73,841
10.01 Guideway: At-grade exclusive right-of-way	0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	13,665
10.03 Guideway: At-grade in mixed traffic	0
10.04 Guideway: Aerial structure	7,269
10.05 Guideway: Built-up fill	0
10.06 Guideway: Underground cut & cover	0
10.07 Guideway: Underground tunnel	0
10.08 Guideway: Retained cut or fill	0
10.09 Track: Direct fixation	0
10.10 Track: Embedded	0
10.11 Track: Ballasted	47,294
10.12 Track: Special (switches, turnouts)	5,614
10.13 Track: Vibration and noise dampening	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	25,592
20.01 At-grade station, stop, shelter, mall, terminal, platform	21,958
20.02 Aerial station, stop, shelter, mall, terminal, platform	0
20.03 Underground station, stop, shelter, mall, terminal, platform	0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0
20.05 Joint development	0
20.06 Automobile parking multi-story structure	0
20.07 Elevators, escalators	3,634
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	14,744
30.01 Administration Building: Office, sales, storage, revenue counting	0
30.02 Light Maintenance Facility	0
30.03 Heavy Maintenance Facility	12,697
30.04 Storage or Maintenance of Way Building	2,047
30.05 Yard and Yard Track	0
40 SITEWORK & SPECIAL CONDITIONS	8,923
40.01 Demolition, Clearing, Earthwork	0
40.02 Site Utilities, Utility Relocation	0
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatment	0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	0
40.05 Site structures including retaining walls, sound walls	0
40.06 Pedestrian / bike access and accommodation, landscaping	0
40.07 Automobile, bus, van accessways including roads, parking lots	8,923
40.08 Temporary Facilities and other indirect costs during construction	0
50 SYSTEMS	77,991
50.01 Train control and signals	41,130
50.02 Traffic signals and crossing protection	35,110
50.03 Traction power supply: substations	0
50.04 Traction power distribution: catenary and third rail	0
50.05 Communications	1,751
50.06 Fare collection system and equipment	0
50.07 Central Control	0
Construction Subtotal (10 - 50)	201,092
60 ROW, LAND, EXISTING IMPROVEMENTS	12,228
60.01 Purchase or lease of real estate	12,228
60.02 Relocation of existing households and businesses	0
70 VEHICLES (number)	69,125
70.01 Light Rail	0
70.02 Heavy Rail	0
70.03 Commuter Rail	69,125
70.04 Bus	0
70.05 Other	0
70.06 Non-revenue vehicles	0
70.07 Spare parts	0
80 PROFESSIONAL SERVICES	41,942
80.01 Preliminary Engineering	6,484
80.02 Final Design	12,966
80.03 Project Management for Design and Construction	1,851
80.04 Construction Administration & Management	14,818
80.05 Insurance	0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	1,851
80.07 Surveys, Testing, Investigation, Inspection	370
80.08 Start up	3,601
Subtotal (10 - 80)	324,387
90 UNALLOCATED CONTINGENCY	0
Subtotal (10 - 90)	324,387
100 FINANCE CHARGES	12,718
Total Project Cost (10 - 100)	337,106

Attachment 3
Baseline Cost Estimate

Project Sponsor Name
Project Name

Table 2 - Inflated Cost to Year of Expenditure

	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Inflation Factor	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	47,762	8,112	55,874	1.3216	73,841
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	16,346	3,019	19,365	1.3216	25,592
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	8,810	2,512	11,322	1.3022	14,744
40 SITEWORK & SPECIAL CONDITIONS	5,194	1,558	6,752	1.3216	8,923
50 SYSTEMS	44,533	13,360	57,893	1.3472	77,991
60 ROW, LAND, EXISTING IMPROVEMENTS	7,401	2,220	9,621	1.2710	12,228
70 VEHICLES (number)	40,700	11,100	51,800	1.3345	69,125
80 PROFESSIONAL SERVICES	27,840	5,485	33,325	1.2586	41,942
90 UNALLOCATED CONTINGENCY			0	#DIV/0!	0
100 FINANCE CHARGES			9,356	1.3593	12,718
Total Project Cost (10 - 100)			255,308	1.3204	337,106

Attachment 3
Baseline Cost Estimate

Project Sponsor Name
Project Name

Table 3 - BCE by Source of Funding

	Total Project Cost in YOE Dollars (X000)	Double Check Total (X000)	Federal 5309 New Starts	Federal Other	Local
10 GUIDEWAY & TRACK ELEMENTS (route miles)	73,841	0			
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	25,592	0			
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	14,744	0			
40 SITEWORK & SPECIAL CONDITIONS	8,923	0			
50 SYSTEMS	77,991	0			
60 ROW, LAND, EXISTING IMPROVEMENTS	12,228	0			
70 VEHICLES (number)	69,125	0			
80 PROFESSIONAL SERVICES	41,942	0			
90 UNALLOCATED CONTINGENCY	0	0			
100 FINANCE CHARGES	12,718	0			
Total Project Cost (10 - 100)	337,106	0	0	0	0

Sources of Federal Funding and Matching Share Ratios				
	Costs Attributed to Source of Funds (X000)	Federal/ Local Matching Ratio within Source	All Federal Funds (X000)	Local Funds (X000)
Federal 5309 New Starts				
Federal Other (pls say what..)				
Total	0		0	0
Overall Federal Share of Project		#DIV/0!		
New Starts Share of Project		0.00%		

