APPENDIX A: CAPITAL AND OPERATING COST ESTIMATES

Capital Costs and Annual O&M Costs have been estimated for the two Monorail/AGT system applications. The Capital Costs were estimated using a Lea+Elliott proprietary model that estimates unit costs based on trends of past bids for AGT systems, adjusted specifically for monorail type AGT technologies. The O&M costs were developed using the detailed Lea+Elliott proprietary O&M cost model that estimates operating and maintenance labor and material requirements based on the assumed schedule of operations.

The assumed hours of operations are as follows:

Monday – Friday	5:30 a.m. – 11:30 p.m.
Saturday and Sunday	7:30 a.m. – 8:30 p.m.

The following tables present the Schedules of Operations for the two Monorail/AGT applications.

	LARGE MONORAIL SCHEDULE OF OPERATIONS						
1	One round trip distance (mi) =	48.1					
2	Round trip time (sec) =	4920					
3	Round trips / Hour per Train =	0.731707317					
4	Average Operating Speed (Miles/Hr) =	35.19512195					
5	Vehicle energy consumption (kWh/veh-mi) =	4.8					
6	Number of operating weekdays per year =	261					
7	Number of operating Saturdays per year =	52					
8	Number of operating Sundays/holidays per year =	52					
9	Total number of route operating days per year =	365					
10	**Weekdays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
11	*Peak Operating Fleet* =	5	19	258.9	2	38	1,745,326
12	*Normal Operating Fleet* =	7	8	615.0	2	16	1,028,824
13	*Off Peak Operating Fleet* =	6	5	984.0	2	10	551,156
14	*Night Period Operating Fleet* =	0	0	NA	2	0	0
15	Totals =	18					3,325,306
16	**Saturdays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
17	*Peak Operating Fleet* =	0	19	258.9	2	38	0
18	*Normal Operating Fleet* =	7	8	615.0	2	16	204,976
19	*Off Peak Operating Fleet* =	6	5	984.0	2	10	109,809
20	*Night Period Operating Fleet* =	0	0	NA	2	0	0
21	Totals =	13					314,785
22	**Sundays and Holidays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
23	*Peak Operating Fleet* =	0	19	258.9	2	38	0
24	*Normal Operating Fleet* =	7	8	615.0	2	16	204,976
25	*Off Peak Operating Fleet* =	6	5	984.0	2	10	109,809
26	*Night Period Operating Fleet* =	0	0	NA	2	0	0
27	Totals =	13	Peak Trains	Standby Trains	Oper. Trains	Train Size	314,785
28	**TOTALS**	**6,050**	**19**	**1**	**20**	**2**	**3,954,876**

	SMALL MONORAIL SCHEDULE OF OPERATIONS						
1	One round trip distance (mi) =	48.1					
2	Round trip time (sec) =	6924					
3	Round trips / Hour per Train =	0.519930676					
4	Average Operating Speed (Miles/Hr) =	25.00866551					
5	Vehicle energy consumption (kWh/veh-mi) =	0.8					
6	Number of operating weekdays per year =	261					
7	Number of operating Saturdays per year =	52					
8	Number of operating Sundays/holidays per year =	52					
9	Total number of route operating days per year =	365					
10	**Weekdays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
11	*Peak Operating Fleet =*	5	29	238.8	6	174	5,678,718
12	*Normal Operating Fleet =*	7	12	577.0	6	72	3,289,740
13	*Off Peak Operating Fleet =*	6	7	989.1	6	42	1,644,870
14	*Night Period Operating Fleet =*	0	0	NA	6	0	0
15	Totals =	18					10,613,328
16	**Saturdays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
17	*Peak Operating Fleet =*	0	29	238.8	6	174	0
18	*Normal Operating Fleet =*	7	12	577.0	6	72	655,427
19	*Off Peak Operating Fleet =*	6	7	989.1	6	42	327,714
20	*Night Period Operating Fleet =*	0	0	NA	6	0	0
21	Totals =	13					983,141
22	**Sundays and Holidays**	**Hours/Day**	**Trains (2)**	**Headway (sec)**	**Train Size**	**Vehicles**	**Veh-miles**
23	*Peak Operating Fleet =*	0	29	238.8	6	174	0
24	*Normal Operating Fleet =*	7	12	577.0	6	72	655,427
25	*Off Peak Operating Fleet =*	6	7	989.1	6	42	327,714
26	*Night Period Operating Fleet =*	0	0	NA	6	0	0
27	Totals =	13	Peak Trains	Standby Trains	Oper. Trains	Train Size	983,141
28	**TOTALS**	**6,050**	**29**	**1**	**30**	**6**	**12,579,609**

The Capital Costs were estimated as follows:

LARGE MONORAIL SYSTEM CAPITAL COST ESTIMATE
(Excluding any land acquistion)

ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST	ITEM TOTAL (US 2003 Dollars)
Stations Facilities	12	Each	$ 7,550,000	$ 90,600,000
PDS Substation Facilities	21	Each	$ 65,000	$ 1,365,000
Maintenance and Storage Facility	36,000	Sq. Ft.	$ 75	$ 2,700,000
Guideway Structure and Guideway Equipment	254,138	Single Lane Ft.	$ 2,500	$ 635,345,000
Station Equipment	24	Platform Edges	$ 460,000	$ 11,040,000
Maintenance and Storage Facility Equipment and Spare Parts & Equipment	22	2-Car Trains	$ 105,000	$ 2,310,000
Power Distribution System Equipment	254,138	Single Lane Ft.	$ 275	$ 69,887,950
Command, Control and Communications Equipment	254,138	Single Lane Ft.	$ 220	$ 55,910,360
Vehicles	22	2-Car Trains	$ 3,000,000	$ 66,000,000
Other Operating System Equipment	254,138	Single Lane Ft.	$ 50	$ 12,706,900
Subtotal 1				**$ 947,865,210**
Project Management and Administration	35.0%	% of Subtotal 1		$ 331,752,824
Subtotal 2				**$ 1,279,618,034**
CONTINGENCY	10.0%	% of Subtotal 2		$ 127,961,803
GRAND TOTAL				**$ 1,407,579,837**

The Capital Cost for a Monorail/AGT application was found to be in the range of $1.3 to $1.4 billion. The large Monorail/AGT application is estimated to be about $81 million more than the small Monorail/AGT application. This additional 6% Capital Cost is due mainly to the higher cost for the guideway and the fleet, in spite of the higher station costs for the small Monorail/AGT.

SMALL MONORAIL SYSTEM CAPITAL COST ESTIMATE
(Excluding any land acquistion)

ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST	ITEM TOTAL (US 2003 Dollars)
Stations Facilities	12	Each	$ 12,250,000	$ 147,000,000
PDS Substation Facilities	21	Each	$ 65,000	$ 1,365,000
Maintenance and Storage Facility	47,000	Sq. Ft.	$ 75	$ 3,525,000
Guideway Structure and Guideway Equipment	254,138	Single Lane Ft.	$ 2,100	$ 533,689,800
Station Equipment	24	Platform Edges	$ 460,000	$ 11,040,000
Maintenance and Storage Facility Equipment and Spare Parts & Equipment	34	6-Car Trains	$ 105,000	$ 3,570,000
Power Distribution System Equipment	254,138	Single Lane Ft.	$ 275	$ 69,887,950
Command, Control and Communications Equipment	254,138	Single Lane Ft.	$ 220	$ 55,910,360
Vehicles	34	6-Car Trains	$ 1,600,000	$ 54,400,000
Other Operating System Equipment	254,138	Single Lane Ft.	$ 50	$ 12,706,900
Subtotal 1				**$ 893,095,010**
Contractor's Project Management and Administration	35.0%	% of Subtotal 1		$ 312,583,254
Subtotal 2				**$ 1,205,678,264**
CONTINGENCY	10.0%	% of Subtotal 2		$ 120,567,826
GRAND TOTAL				**$ 1,326,246,090**

The following tables present the estimates for the Annual O&M Costs.

LARGE MONORAIL ANNUAL O&M COST

ITEM		AMOUNT (US $ 2003)
Labor		$ 5,975,000
Materials		$ 2,193,000
Subtotal 1		**$ 8,168,000**
Profit and G&A	10%	$ 817,000
ANNUAL O&M CONTRACT		**$ 8,985,000**
Utilities		$ 7,153,000
Technical Assistance		$ 100,000
Other APM Administrative Requirements		$ 100,000
Subtotal 2		**$ 16,338,000**
Contingency	10%	$ 1,634,000
TOTAL ANNUAL O&M COST		**$ 17,972,000**

SMALL MONORAIL ANNUAL O&M COST

ITEM		AMOUNT (US $ 2003)
Labor		$ 12,356,000
Materials		$ 4,816,000
Subtotal 1		**$ 17,172,000**
Profit and G&A	10%	$ 1,718,000
ANNUAL O&M CONTRACT		**$ 18,890,000**
Utilities		$ 7,199,000
Technical Assistance		$ 100,000
Other APM Administrative Requirements		$ 100,000
Subtotal 2		**$ 26,289,000**
Contingency	10%	$ 2,629,000
TOTAL ANNUAL O&M COST		**$ 28,918,000**

The Annual O&M Costs for the small Monorail/AGT were estimated to be about $11 million more than for the large Monorail/AGT. This 6% higher annual operating cost is due mainly to the maintenance of the required larger fleet size.

APPENDIX B – MEETING MINUTES

Regional Monorail Exploratory Study

Meeting Summary
Steering Committee Meeting #1 June 24, 2002

1. Introduction – Tigist Zegeye
   Opening remarks and self-introduction of attendees

2. History – Rep Dave Ennis
   Credited Mr. Doug Andrews who has been working on a Monorail Plan in Delaware for the past (12) years

   Spoke about concept drawing from 1912 showing DuPont Highway with passenger cars and trains and in 1970 Secretary Maginess proposed a figure (8) monorail system, which proved to costly for implementation

   He noted how the Fair Play Station and Claymont Station have proven to be very successful light rail lines and filled the needs of commuters traveling to Wilmington and Philadelphia

   He spoke about intermodal transportation connecting bus and water centers with monorail stations (Fox Point State Park) He emphasized that a monorail system must connect to Wilmington and not go around it
   He showed slides on a monorail system in Jacksonville, FL connected to a bridge and built at the same time

3. Project Background and Tasks – Randolph Richardson (Lea+Elliott)
   Mr. Richardson discussed the major questions raised in the Request for Proposals for the monorail study and outlined the consultant team's approach. The five-month study will examine existing monorail systems and assess the potential for such technologies in the Wilmington region. The study team is using a broad interpretation of the term "monorail" where a wide range of automated guideway technologies (AGT) will be considered. These AGT systems include steel-wheeled and rubber tired self-propelled people mover systems. An initial corridor will be recommended and technical feasibility will be assessed along with the accompanying demographic, land use, and financial issues.

4. Purpose and Need Statement – Alan Brick-Turin (HNTB)
   What problems will the project address?
   Creates a framework for evaluating the solutions

   Principal Issues:
   Anticipated travel demand
   Capacity deficiencies in the existing system
   Relationships to the Regional Transportation Systems
   Social/Economic Development needs

FTA Criteria:
Mobility
Environmental Quality
Operating Efficiencies
Cost Effectiveness
Land Use

5. Purpose and Need Discussion

- World economy thru the Port of Wilmington
- Gain National Exposure
- Growth and Development at the Port
- Promote third wave economy
- Safety
- Improve transportation system efficiency
- Improve mobility (individual mode to mass mode)
- Improve transit connections
- Duplication of transportation services
- Connect communities with urban amenities in region and NE corridor
- Promote denser development and transit
- Promote tourism
- Serve future residents
- Air Quality compliance/Environmental needs
- Is this achievable or is it a dream
- What is the cost per passenger
- What are the impediments (land control, political obstacles)
- Is it cost effective
- Public and Political acceptance
- Must serve residential, retail and other employment centers
- Must serve off peak centers
- Where do people want to go
- Need to get people from suburbs to work
- Must utilize underutilized transportation right of ways
- Must convince commuters to use transit and leave cars at home
- Duration (from concept to completion- 10 years)
- Must support the goals of "Livable Delaware"

6. Issues for Monorail Planning – Randolph Richardson (Lea+Elliott)

   Mr. Richardson discussed North American monorail/AGT projects that are or are evolving into major line-haul mass transportation systems. The projects discussed were monorail efforts in Las Vegas, Seattle and Jacksonville and the automated rapid transit system in Vancouver, British Columbia. System characteristics such as daily ridership, peak capacity, dual lane miles, number of stations, and intermodal connections were described for each system as they evolved from a simple distribution system to a line haul service. This type of development is particularly true for Las Vegas and Seattle. Jacksonville is still essentially a local distribution system and Vancouver actually began as a major line haul system.

7. General Discussion – Public

   - Monorail System should serve the inner city commuter and residents? It appears that all proposed alignments are suburban related (Del Park, Christiana Hospital, U of D, Fox Point Park)
   - If it doesn't serve Wilmington, it is not viable
   - The alignment must serve center city Wilmington
   - Does current modeling give us real world future mass movement of people?
   - Does current modeling address rapid evacuations of large masses of people?
   - The existing infrastructure of transportation can not accommodate future population growth trends
   - Currently little community acceptance of more density
   - Relieve congestion in busy corridors
   - Tie to Brownfield redevelopment
   - Monorail system must align with population density centers to be viable (estimates indicate people will only walk appox 1/4 mile to a rail station and will only drive appox one third of the total travel distance to a rail station)

8. Project Schedule – Heather Ehrlich Dunigan (WILMPACO)

   - Steering Committee Meetings/Workshops in Aug/Sept (dates TBA)
   - Information on www.wilmapco.org/monorail
   - Dissemination of Steering Committee minutes and Public Comments forthcoming
   - Additional meetings with individuals or groups can be arranged upon request

Regional Monorail Exploratory Study
Management Committee Meeting Summary (August 28, 2002)
(Unofficial)

A. After a self-introduction prompted by Tegist Zegeye of WILMAPCO a slide presentation was given to the Management Committee Members in support of various handouts from the Consultant team and WILMAPCO.

1. The first pr There were no fatal flaws identified that would prohibit inclusion of Monorail/AGT in a study of mass transportation alternatives in the Wilmington metropolitan area.

   There were no fatal flaws identified that would prohibit inclusion of Monorail/AGT in a study of mass transportation alternatives in the Wilmington metropolitan area.

   Presenter was Alan Brick-Turin from HNTB who reviewed the "Purpose and Need" statement developed from the first Steering Committee meeting on June 24, 2002. The project "Purpose and Need" section is number 3.0 through 3.2 of the "Technical Memorandum", Part A – Feasibility Analysis draft copy dated August 28, 2002. The initiation of a shift from single occupancy vehicle to high occupancy vehicle will be incorporated into the "Purpose and Need"
   Mr. Turin walked the committee members through the development process emphasizing the FTA criteria for measurement of:
   - Mobility
   - Environmental quality
   - Operating efficiencies
   - Cost effectiveness
   - Land use

   He then addressed the motivations for consideration of AGT (automated guide way transit) generated at the first meeting. These include:
   - Transportation Improvement
   - Improved Quality of Life offered by this type of transportation system
   - Destinations desired (work, home, retail shopping, tourism)
   - Is the final product logical and realistic

   In closing, Mr. Turin discussed what role AGT systems including monorails might play in the overall transportation system for the Wilmington region and what benefits are gained such as mitigating highway congestion, improved air quality, integration with other modes of travel and improving connectivity with other cities and urban centers.

2. The next presenter was Frank Spielberg of SG Associates who discussed the methodologies use in defining the proposed corridor alignment centers and

segments. He explained how "trip generators" were use to identify the seven segments which became the framework of the proposed corridor alignment. Mr. Spielberg addressed issues in the "Study Area" such as major roads, major rail lines, demographics and housing and other centers of population densities.

This generated some discussion on a possible tie into Southeastern Pennsylvania along the Route 202 corridor. There was also some discussion of how recent studies tie into the WILMAPCO 2025 year (MTP) Metropolitan Transportation Plan and its long-range goals

3. The final presenter was Randy Richardson of Lea+Elliott who addressed the measures to be evaluated by the Management Committee to define and recommend the most feasible corridor alignment among the identified segments in the study. Mr. Richardson also presented cost figures for both existing and planned AGT systems in other cities. He emphasized that these figures did not include land acquisition costs, which triggered some comments on land use issues, and the development of employment centers in suburban areas (offices in cornfields concept).

   Mr. Richardson also cited some figures on public and private funding of AGT systems in others cities and then he detailed the technologies currently available and where they are presently in use. He offered handouts on the alignment corridors of both existing and planned systems and how the footprints of different technologies are very similar and interchangeable thereby answering concerns over lack of parts and engineering in future years if manufactures are not here to support the product.

   After considerable debate among Management Committee members, a proposed corridor alignment was agreed upon for recommendation to the Steering Committee. The seven segments outlined in the "Draft Technical Memorandum" were narrowed to four areas and the most viable corridor was determined to be from the "Route 40 area to the A. I. DuPont Hospital Site". Specifically, the alignment will follow a path from "Peoples Plaza through "Governors Square" to the "Christiana Hospital" then moving east to the "New Castle County Airport" complex and "State Hospital" into "Wilmington" and proceeding north to the "Blue Ball Properties" and ending at the "A. I. DuPont Hospital"

   The Management Committee meeting ended in late afternoon with the Steering Committee meeting schedule for later that night at which time the same agenda would be followed including the recommendation of the proposed corridor alignment to the Steering Committee.

Regional Monorail Exploratory Study
Steering Committee Meeting Summary (August 28, 2002)
(Unofficial)

A. After an introduction by Tegist Zegeye of WILMAPCO a slide presentation was given to the Steering Committee Members in support of various handouts from the Consultant team and WILMAPCO.

1. The first presenter was Alan Brick-Turin from HNTB who reiterated that monorails are just one of many AGT (automated guide way transit) systems and how a possible monorail in New Castle County would fit into other planned transportation projects. He then reviewed the "Purpose and Need" statement developed from the first Steering Committee meeting on June 24, 2002. The project "Purpose and Need" section is number 3.0 through 3.2 of the "Technical Memorandum", Part A – Feasibility Analysis draft copy dated August 28, 2002. The initiation of a shift from single occupancy vehicle to high occupancy vehicle will be incorporated into the "Purpose and Need"
Mr. Turin walked the committee members through the development process emphasizing the FTA criteria for measurement of:
    - Mobility
    - Environmental quality
    - Operating efficiencies
    - Cost effectiveness
    - Land use

    He then addressed the motivations for consideration of AGT (automated guide way transit) generated at the first meeting. These include:
    - Transportation Improvement
    - Improved Quality of Life offered by this type of transportation system
    - Destinations desired (work, home, retail shopping, tourism)
    - Is the final product logical and realistic

    In closing, Mr. Turin discussed what roles AGT systems including monorails might play in the overall transportation system for the Wilmington region and what benefits are gained such as mitigating highway congestion, improved air quality, integration with other modes of travel and improving connectivity with other cities and urban centers.

    The next presenter was Frank Spielberg of SG Associates who discussed the methodologies use in defining the proposed corridor alignment centers and segments. He explained how "trip generators" were used to identify the seven segments proposed as a framework for the corridor alignment.

Mr. Spielberg addressed issues in the "Study Area" such as major roads, major rail lines, demographics and housing and other centers of population densities. The comments from the Management Committee meeting earlier in the day regarding the possibility of a secondary corridor into Pennsylvania along Route 202 were mentioned but it was noted that previous dialogue with officials in Southeastern Pennsylvania resulted in no interest on possible new AGT links since the SEPTA line is currently in operation.

2. The final presenter was Randy Richardson of Lea+Elliott who explained how the Management Committee debated and narrowed the possible corridor segments from seven to four before agreeing on the final proposed alignment. Mr. Richardson also presented cost figures for both existing and planned AGT systems in other cities to the Steering Committee. He emphasized that these figures did not include land acquisition costs and noted how this had triggered some comments at the Management Committee meeting on land use issues, and the development of employment centers in suburban areas (offices in cornfields concept).

   Mr. Richardson also cited some figures on public and private funding of AGT systems in others cities and then he detailed the technologies currently available and where they are presently in use. He offered handouts on the alignment corridors of both existing and planned systems and how the footprints of different technologies are very similar.

   Mr. Richardson then presented the Steering Committee with the Management Committee's recommendation on the proposed corridor alignment. He relayed how the seven segments outlined in the "Draft Technical Memorandum" were narrowed to four areas and the final alignment was determined. He then highlighted the path from the "Route 40 area to the A. I. DuPont Hospital Site". Specifically, the alignment will follow a path from "Peoples Plaza through "Governors Square" to the "Christiana Hospital" then moving east to the "New Castle County Airport" complex and "State Hospital" into "Wilmington" and proceeding north to the "Blue Ball Properties" and ending at the "A. I. DuPont Hospital"

3. Feedback from Steering Committee members

   The following comments were recorded from members of the audience:

   - Representative Lavelle requested that consideration be given to the track alignment and its overall impact before the final corridor alignment is approved
   - Question from the audience if businesses have been approached regarding use of their property for parking at proposed stations. It was noted by the Consultant team this is only a study.
   - Why wasn't Hockessin included in the proposed alignment since it generates many trips to Wilmington and other activity centers

- Why was Newark excluded? Noted that SEPTA already operates at Fairplay Station.
- There is no guarantee that people will use a monorail or other AGT if built (will not give up the automobile)
- The advocate from the Sierra Club suggested dropping the use of the word "Monorail" in favor of a generic form of AGT (automated guide way transit). Monorail conveys wrong message to the public about this study.
- Question are we looking at future population growth and how transportation demands will be accommodated
- Have Pennsylvania transportation officials been contacted regarding this study. Yes and they are not interested in linking with Delaware.
- There was a comment from the audience comparing the estimated cost of an Urban AGT per mile to the approximate cost to build SR 1 per mile ($ 50-$75 million per mile vs. $ 38 million per mile) unconfirmed.
- A representative from MBNA read a visionary letter he sent to politicians in 1999 highlighting the benefits of a monorail system not only for New Castle County but also for the entire state of Delaware.

4. Public Workshop

The Steering Committee meeting ended with the announcement by Heather Dunigan of the next public workshop on the "Regional Monorail Exploratory Study" scheduled for September 25, 2002 to provide outreach and solicit public opinion.

APPENDIX C – UNSCIENTIFIC SURVEY RESULTS

Regional Monorail Exploratory Study - SURVEY

Please take a minute to fill out this survey. Your answers will be used to determine if we should continue to consider monorails in New Castle County. Space is included after each question for any comments you wish to make or you may write additional comments on the back. ***Please note: Monorail is used in this survey as a generic term for automated quideway transit (AGT). The actual type of system has not yet been determined.***

1. Do you feel increasing traffic congestion will justify a monorail system in New Castle County within the next 30 years? Yes-6 No-2 Maybe-1

   Comments:

   - Yes, traffic is only going to get worse, as projections show. Air quality must also be solved.
   - We may be under water in 30 years. We need relief now!
   - Yes, but only in certain corridors.
   - Traffic is at a standstill now. There is no more room for roads. I think this is a wonderful alternative.
   - It should become viable much sooner.
   - A monorail system is so expensive for the number of people it serves, that it would be difficult to justify on a cost/benefit basis. The cost is prohibitive and communities won't let it be built in their neighborhoods.
   - No, however depending on my "feeling" or those of the multitude is fundamentally absurd when REAL information could be generated by simple LOCAL experiments to measure demand elasticity's with respect to price (fare levels) and time saving potential.

2. Would you use a monorail, instead of driving, for travel within New Castle County? Yes-5 No-1 Maybe-3

3. What factors would you consider in making your decision?
   [Rate in order of importance from 1 (most important) to 7 (least important)]

   Average ranking:

2.0 Station locations	3.7 Hours of operation
2.4 Price	4.3 Speed
2.5 Reliability	Other:
3.0 Safety	• Clean attractive design
	• Living with global warming
	• Ridership
	• Time saving potential
	• Frequency

   Comments:

   - Public health—air quality—is the major factor in addition to growing congestion.
   - Must start where people live or frequent and go to somewhere they want to go.
   - If it doesn't have a 5-10 minute headway, it won't be sufficiently usable. Delaware is so small; you can get everywhere quickly and conveniently. People won't ride a monorail anymore than they do buses. It takes too much time compared to cars.

4. Do you support the route alignment proposed for initial analysis? Why or why not. Yes-5 No-3 Maybe-1

Comments:

- Suggest extending to rapidly growing MOT area south of the canal.
- It makes sense to run it where there are population centers and where a majority of people are traveling from (southern NCC growth area). It should continue to the Philadelphia Airport.
- It follows the same route as the already running rail system.
- Route is ABSURB. That would be readily demonstrated with a few ballpark estimates of right of way costs
- Routes 141, 202 or 2 would also be good. Route 40 is good, but people there don't want it.
- Alignment needs to serve greatest population and employment densities but Delaware doesn't have great enough density to justify cost. We're not that urban.

5. Do you support tbe goals and criteria for evaluation identified by the consultants and the project committees? What additional goals and criteria should we consider? Yes-5 No-1 Maybe-1

Comments:

- Needs to serve people where they work and live.
- Reduce SOV.
- Create public/private partnerships to market as economic development tool.
- Some roads and harbors will be underwater in 30 years.
- We should first consider financial feasibility—including up front funding—of the cheapest among the several monorail alternatives, and how that would compare with a bus system with and without HOV lanes where possible, are the only RELEVANT concerns.
- Most important: cost-benefit ratio. If this doesn't have realistic cost associated with it (and numbers so far seem unacceptable) then we should continue wasting money on what is not feasible.

6. Would you be opposed to a monorail station or rail line in your neighborhood if it benefited everyone overall? Yes-4 No-4 Maybe-1

Comments:

- Clearly no place for it to go near me.
- If it is attractively designed and quiet design and spurs economic development appropriate and infill with community amenities, it will succeed.
- Only because there is not enough buffer between the monorail and housing. Careful balance between access and disturbance is crucial.
- It would be quiet and nonpolluting. Make sure there is enough parking.
- Depends on routing and station arrangements.

APPENDIX D: STAKEHOLDER COMMENTS

APPENDIX E: PRESS REPORTS

Delaforum

A POTPOURRI OF MISCELLANEOUS NEWS SCRIBBLED IN A REPORTER'S NOTEBOOK

May 2002

Wilmington Area Planning Council has hired a consultant, Lea & Elliott, to study the feasibility of a monorail transit system in New Castle County. It will cost about $150,000 and is due to be completed in six months.

Such a system looping through Brandywine Hundred from a commuter railroad station at or near Edgemoor to the Brandywine and continuing along the Route 141 highway corridor to the station at Delaware Park has long been advocated by state Representative David Ennis. Most recently it or a light railway line was considered as a long-range adjunct to the expansion of the Tyler McConnell Bridge crossing. Critics have said that such systems, which are in use in a few urban areas in this nation and more widely in Europe, are too expensive relative to the benefits they offer and require support structures not likely to find favor with residents along their right-of-way.

Heather Ehrlich, the council's senior planner said the study will address public acceptance, technical feasibility and the possibility of tapping "innovative sources" of financing. If deemed feasibility, the consultant is to come up with a recommendation concerning a route and outline future steps necessary to make the idea a reality. One element of the report is "identification of fatal flaws, if any, that will prevent implementation" of a monorail. She said that the study process is to include council-sponsored public meetings Ennis has maintained that a monorail would invite both commuter and tourist patronage and, as such, should draw financial and other support from businesses and other private interests.

www.delawareonline.com The News Journal

WILMAPCO study of monorail feasibility makes a lot of sense

06/05/2002

There are no simple solutions to the crowded, polluted highways in New Castle County. Everything from staggered working hours to high-occupancy vehicle lanes has been considered. Mass transit is a wise and efficient option to automobile commuting, but it hasn't made a significant dent in the rush-hour traffic in the greater Wilmington metropolitan area. The Concord Pike and I-95 are crawling parking lots each morning and evening. Granted, our "rush hours" can't compare with those in the nation's big cities, but the pollution and aggravation are no less real.

There has been on-again, off-again talk of light rail as an alternative not only to the problems of congested New Castle County but also as a way to link Wilmington, the state capital, Dover, and, ultimately the beach areas. The state Department of Transportation is now contemplating a study of linking Dover and Wilmington with light rail. A study of whether such a link would work and be used will cost between $150,000 and $200,000, according to Nathan Hayward III, DelDOT's secretary. Mr. Hayward's enlightened view of mass transit is a far cry from the days of Kermit Justice, DelDOT secretary when Del. 1 was on the drawing board. Many people urged the state to incorporate into the highway plans a design for light rail that could be added later. The suggestion was ignored.

For about the same amount of money being spent to study the north-south rail link, the Wilmington Area Planning Council (WILMAPCO) is going to study the feasibility of construction of a monorail system in the northern part of New Castle County. Rep. David Ennis of Fox Point has long advocated a monorail system that would wend its way through Brandywine Hundred and then on to points west. A monorail that would run along Del. 141 was considered when the problems with the J.H. Tyler McConnell Bridge were examined during the efforts to mitigate traffic congestion that a new AstraZeneca headquarters would bring.

Now, WILMAPCO, the bi-state group that essentially controls the federal transportation dollars for New Castle and Cecil (Md.) counties, will try to discern if such a plan might work. Any plan that

offers efficient alternatives to automotive travel is worth exploring. The majority of Delawareans have resisted mass transit. Their reasons vary, but the day will come when mass transit will be absolutely necessary, and it's always good to have several options available for consideration.

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Meeting on monorail feasibility to be Monday

Possible northern Delaware system might ease traffic, help clean air

By STEPHANIE L. ARNOLD
Staff reporter
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A Steering Committee to determine public acceptance and the technical and financial feasibility of a monorail system in northern Delaware will have its first meeting Monday.

The committee includes members of the Wilmington Area Planning Council and residents. The council recently agreed to pay $150,000 to Virginia-based transportation and design firm Lea+Elliott Inc. to conduct a six-month study on the need for the rail system. The council, which is responsible for coordinating New Castle County and Cecil (Md.) County transportation plans, operates on state and federal tax dollars.

The council's commitment to studying a monorail system is due in large part to the crowded roads and Delaware's urgent need to meet federal clean air laws, state Rep. David H. Ennis, R-Fox Point, said.

"I just think that the whole idea of public transportation has matured," said Ennis, a longtime advocate of a monorail. "As it stands, we have until 2004 to comply with the clean air standards. This means encouraging our residents to take other modes of transportation. We should not preclude alternative forms like monorails."

The study would determine the best locations for a monorail system. One idea is to run the rail along the Del. 141 corridor with connections at Delaware Park in Stanton and Fox Point State Park.

Critics say monorails are too expensive. Last week consultants in Seattle, Wash., released drawings of downtown stations on a proposed $1.2 billion monorail system. Seattle voters will decide the fate of the proposal in November.

State Rep. Greg Lavelle, R-Sharpley, said the cost and the system's impact on neighborhoods worry him.

"We have to be careful when we look at putting up a monorail in and around neighborhoods," Lavelle said. "Some people talk about the possibility with such a cavalier attitude, but you've got to be careful. We have to keep in mind that people live here."

Daniel Bockover, president of the Council of Civic Organizations of Brandywine Hundred, said many people who have criticized the idea have never researched it.

"You can't really say it won't work until you know what needs to be done first," Bockover said. "Once we outline what difficulties need to be addressed, then we can start talking money. Right now, no one knows enough to say yes or no."

The idea of a monorail was one suggestion given to an advisory group looking for ways to ease congestion on the Tyler McConnell bridge early this year. Delaware Department of Transportation officials said they had not ruled out the option, but said it would be decades before it would be possible.

The council's senior planner, Heather Ehrlich, said the study will gauge the public's interest in a monorail system, whether it would make sense financially and whether there is enough room for it. The study will also consider the exact route of the monorail and its possible environmental impact. The council's findings will be forwarded to DelDOT.

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Monorail must connect city, panel says

Wilmington link an important part of regional system

By STEPHANIE L. ARNOLD
Staff reporter
06/25/2002

A successful monorail system in northern Delaware would need to make connections in Wilmington and not only the suburbs, members of a monorail Steering Committee told consultants Monday.

The demand differs slightly from the initial plan presented by Rep. David H. Ennis, R-Fox Point. His proposal was to run the rail along the Del. 141 corridor, with connections at Delaware Park in Stanton and Fox Point State Park.

Nearly 50 community members, politicians and transportation officials attended the monorail Steering Committee meeting Monday sponsored by the Wilmington Area Planning Council. The meeting was held at the Delaware Transit Corp. in Wilmington.

The meeting comes about a month after the council paid $150,000 to Virginia-based transportation and design firm Lea+Elliott Inc. to conduct a six-month study on the need for a rail system. Representatives from the company made presentations consisting of project schedule information and the general objectives of the study. They asked committee members and others in the audience what they thought should be the primary uses of the proposed Delaware monorail.

In addition to the Wilmington connections, the monorail would have to include the northern part of New Castle County and improve connections from suburban areas to city shopping, jobs and recreation, committee members said.

Steering Committee member Beverley Baxter said she is skeptical of the study. She said she is not convinced that Delaware's population would justify a project that would cost hundreds of millions of dollars.

"We need to know how cost-effective this project is before we spend our tax dollars on something we ultimately won't be able to do," she said. "We need to look at everything from a practical standpoint."

The council's commitment to studying a monorail system is due in large part to crowded roads and Delaware's urgent need to comply with federal clean air laws.

"I am pleased with the community participation," Ennis said. "I want people to understand that my proposal was just that. Nothing is in stone."

The committee will meet two more times - once in August and once in September - before the firm and the committee make a final recommendation to the Wilmington Area Planning Council. The council will forward those findings to the Delaware Department of Transportation.

Monorail system considered by state

BY BLAIR KAHORA
City News Editor

Plans for a new monorail system were publicly reviewed at a meeting in Wilmington Wednesday.

To combat increasing traffic congestion, insufficient parking and growing environmental concern, city and state officials developed a plan for a monorail to stretch across northern Delaware.

State Rep. David H. Ennis, R-6th district, said he has championed the construction of a monorail in the state for the past 20 years.

"It all started as an idea to connect parklands," he said. "Then I realized the value of mass transit."

Ennis said he believes a monorail would be a useful solution to the increasing environmental problems facing the state.

Several types of pollution have caused the state to violate the ozone standards set forth by the Federal Environmental Protection Agency, he said. Auto emissions are the No. 1 contributor.

"We have the greatest control over vehicle pollution," Ennis said. "We can get people out of their cars."

If the state does not meet sufficient ozone levels by 2004, he said, the EPA will start enforcing more stringent standards.

"[The state] will lose federal highway funding," Ennis said.

Heather Dunigan, senior planner for the monorail project, said the state continually combats traffic congestion.

"We can't keep building more roads because it will just produce more cars," she said. "[A monorail] is a nice alternative."

Roger Roy, executive director for the state Transportation Management Association, said the plans focus on residential and corporate densities.

"The selected alignment was chosen to service the downtown business district, the airport and Glasgow, where there is great residential growth," he said.

Roy said the chosen alignment will follow already-established highways in the state, but also stretch into areas with no rail systems.

Dunigan said the state would be unable to fully fund the monorail, which would cost approximately $40 million per mile.

"We are hoping the state will be matched on a federal level," she said. "We are also hoping private companies will chip in, too."

Ennis said financial support from MBNA would be helpful and logical.

MBNA runs its own bus service to take employees from suburban areas to downtown Wilmington, he said. A monorail system would remove the buses from traffic congestion.

"It's almost a tradeoff," Ennis said. "We are encouraging businesses to look at the big picture and chose the lesser of the two evils."

Ennis said the New Castle County Airport will be increasing employment in the near future, and the monorail would diminish the need for additional parking at the airport facility.

"[By instituting the monorail], we are stimulating the establishment of new employment," he said.

Randolph Richardson, manager of planning projects for the consultant group Lea+Elliott Inc., said different committees examined typical factors that supply traffic.

Employment, shopping centers, schools, hospitals and residential housing helped them develop the path stretching from Blue Ball to Peoples Plaza, he said.

"The objective is to look at feasibility," Richardson said.

Dunigan said monorails have become successful in many cities around the world.

"Europe and Asia have monorails that are successful regional systems," she said. "Japan has a 25-mile system that connects suburban areas with the city."

Monorails have also proved profitable in Seattle and Las Vegas, she said.

"Seattle is making a profit from the segment around the Space Needle," she said. "They just received more funding for an extension to the suburban areas."

Ennis said although the monorail will not be constructed for another 20 to 25 years, the state is already planning long-term extensions to the shore areas and Dover.

"We want to target the young people at the beaches," he said. "We also want to help students who commute from Dover to the university."

Dunigan said planners have received mixed opinions from the public, although most people are concerned with the price of construction.

"People are very interested," she said. "We can't keep building roads."