Thoughts on the Cohn-Tennyson Proposal

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Original Tasking

- Tasking
  - » (Partially self-imposed, TAC Chair recommended that I implement my verbal comments)
  - – Add Mr. Tennyson's rail/bus argument as a "front-matter rationale"
  - – Update recommendation to accommodate concerns
- Which I did not do, because…..
  1. Original resolution & concerns appeared "irreconcilable"
  2. Alternative, and similar, options exist

Important “Subtext”

- Some TAC members expressed view that TAC is “reactive” not “proactive”
- Proposal is an attempt in the proactive direction
- Raises an important question:
- Are we supposed to be one or the other?
  - Suggest this is a both important, and a question for a later time.

Current Proposal Points

ROW ≡ Right Of Way

- Rail is the best solution
- Rail should be on the radials
  - 495 outwards consistent w/ “Super Nova”
  - Bus transit to support/create grid
- Comp Plan needs updating to reflect this
  - Details need to be based on:
    - Travel distances & volume, costs of construction & operation, speed of travel, terrain/geography & environment
- ROW procurements need to be planned now
  - This is a “Thiel add” based on last meeting’s discussion—probably the first “active point” in any future doc

Situation & Concerns

- Not 100% agreement in TAC on proposal
  - Emotional content exists & disagreements may be "static/unresolvable"
- Concerns expressed are:
- Right of Way (ROW)
  - Potentially significant expansion of required purchase on radials
  - Patchwork implementation by FFXCTY & VA
  - Uncertainty for planners, land use, businesses
- Funding diversion/opportunity cost
- Tech impacts to demand assumptions
  - (Implicit in the proposal is a "need")
- "Due Diligence" on the topic
  - Specifically ROW need vs. "map" etc.

Assessment (1)

- Both the proposal & concerns express valid points
- Given Mr. Tennyson's numbers (separate document)…
  - Rail $ < bus operationally, Rail $ > bus capital cost
  - Rail, and obtaining ROW, appears to provide better service (With caveats)
  - This appears to be a historically accurate condition
- Procurement of ROW desirable
  - Dulles example (1960's)
  - Dependent on stable/forecast demand profile

Assessment (2)

- Funding diversion/opportunity cost is true, but—assuming proper "system engineering trades"—should not drive us
  - Unless we believe key drivers behind the proposal are incorrect
- ROW patchwork/timeline/uncertainty
  - Assumes poor implementation (Personal assessment <==> "Religious Debate" about govt)

Assessment (3)

- Tech Impacts
  - Timeline (Using Dulles example) > 40 years
  - Tech development & adoption rates exponential
    - Moore's Law (Special case of Wright's Law)
  - Implications of Telepresence* (Telework) likely large
    - Millennials (Gen Y, etc.) and/or successors may ***prefer*** telemeetings to direct interaction
    - FIOS/Xfinity bandwidth & time delays now support HIL** operations
  - "Robot" vehicles TBD, but "autopilots" likely
    - Traffic density, other effects TBD
      - Human factors may be largest limitation
        - » i.e. Robots can tolerate Disneys' "Mr. Toad's Wild Ride", can you?
      - UAVs (Predators , et al) growth vs. other military vehicles
- Conclusion: Long term (20+ yr) demand profile NOT predictable
  - e.g. Digital TV conversion…

*Refs: Prof. T. Sheridan, MIT Man Machine Sys. Lab, E. Thiel, MS Thesis 1983, MIT SSL
** Human In Loop, & assumes likely future QOS (Quality of Service) implementation

Assessment (4)

- Due Diligence
  - Assertion: This concern is “true”…on both “sides of the fence”
    - We, probably, do not have a full “handle” on the full ROW requirements of the initial proposal
    - We do not have the equivalent assessment for the concerns either
      - i.e. Future demand and “tech implications”
  - Question: Tech impact implications for transit demand and ROW?
    - e.g. Demand may increase, but “road efficiency” might increase as well
- So, what do we do?

Observations

- TAC Members Cohn & Tennyson have raised an important set of questions
- Clearly, this is NOT just a Fairfax County problem
- This is a National/International scale problem & set of key questions
- Where will automobile traffic demand* be in 2020/2030, 2040….and what are the “control loops” involved?
  - (i.e. Who is driving?)
- What are the implications for transit?
- What land (If any) should we reserve for transit?
- What is the upside/downside tradeoff between “over acquisition” and “under acquisition” of ROW?
- Strongly suspect we will not obtain agreement on the initial proposal, so….

*Includes “robot” vehicles

Recommendations

- Require transit forecast demand for the "longer range" future "tech upside/downside" is required
  - 2030/2040 "current models" and "tech adjusted" forecasts
    - Likely requires "alternative assessments"
      - A. Toffler→M. Minsky* class upper end, skeptics for lower end, TBD for 'normative'
  - "Futures/Conservative/Appropriate/Normative"** assessment
  - Must include "Future Transit Tech Needs"
    - e.g. "Cars" may not be smart, but large buses?
- Comparison to current/forecast ROW status
- Land acquisition needs assessment → product
  - Including:
    - Error assessment: "Buy Too Much vs. Bus Too Little"

*NOT Ray Kurzweil

**Conservative in an Engineering Sense