RARITAN VALLEY LINE ONE-SEAT RIDE SERVICE TO MANHATTAN

Study Summary

July 13, 2020

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Introduction

- Legislation signed on January 13, 2020 directs NJ TRANSIT to "conduct a study on the feasibility of providing rail service on the Raritan Valley Line (RVL) that offers full-time direct rail service to New York City" that is defined as:

  "a one-seat ride to and from its termini and that operates on weekdays and weekends, during peak hours and non-peak hours"

Introduction

- The current RVL schedule includes direct rail service via the Northeast Corridor (NEC) to Penn Station New York (PSNY) during weekday non-peak and weekday evening non-peak periods.
- Direct service is not provided during the weekday morning and evening peak periods or during weekends.
  - Current RVL peak period service operates to Newark Penn Station (NPS), where PSNY-bound customers transfer to other trains.

Agenda

- Study Overview, Key Findings and Conclusions
- Study Description

Study Overview

- The study evaluated operating conditions and developed alternatives for providing service to PSNY during peak periods and weekends.
  - It analyzed NEC, PSNY and RVL railroad operating capacity during the morning peak period to determine if capacity is available for operating RVL trains to PSNY.
  - It identified and evaluated short, medium, and long-term scenarios for RVL one-seat ride service.

Findings

- In the “shoulders” of the peak period (trains arriving at PSNY before 7:00 am or after 9:20 am), operating RVL One-Seat Ride trains is feasible with minimal system-wide impact.
  - Requires capital investment for yard expansion and rail equipment.
  - Additional train service increases operating expense.

Findings

- In the peak of the peak hours (7:00 am to 9:20 am), scenarios which re-allocate NEC / PSNY capacity to the RVL for One-Seat Ride service would have negative customer impacts:
  - Reduced rail system ridership and carrying capacity to PSNY.
  - Probable overcrowding at NPS and Secaucus Junction.
  - Potentially degraded on time performance.
  - Would not markedly reduce travel times for RVL riders.

Findings

- Scenarios would require:
  - Amtrak collaboration and approval.
  - Conrail collaboration and approval.
  - Capital investment.
  - Increased annual funding for operation and maintenance.

Conclusions

- Some additional RVL one-seat service is feasible on the peak period shoulders.
- Re-allocation of NEC/NJCL slots to PSNY with RVL trains creates overcrowding, reduces trans-Hudson overall capacity and would degrade on-time performance.
- Capacity expansion projects, including the Gateway Program's Hudson Tunnel Project, and eventually expansion of PSNY, are critical for increasing peak hour and weekend one-seat ride service.

Study Introduction

Daily time periods constituting full-time direct rail service:

Service Period Description	Service Status
Weekday Morning Pre-Peak Period	Existing Service Pre-PTC
Weekday Morning Peak Period	Analyzed in Study
Weekday Afternoon	Existing Service Pre-PTC
Weekday Evening Peak Period	Addressed in Study
Weekday Post Evening Peak Period	Existing Service Pre- PTC
Weekend All Day	Analyzed in Study

Capacity Analysis

- Weekday morning and weekend railroad capacity between Newark and PSNY was analyzed.

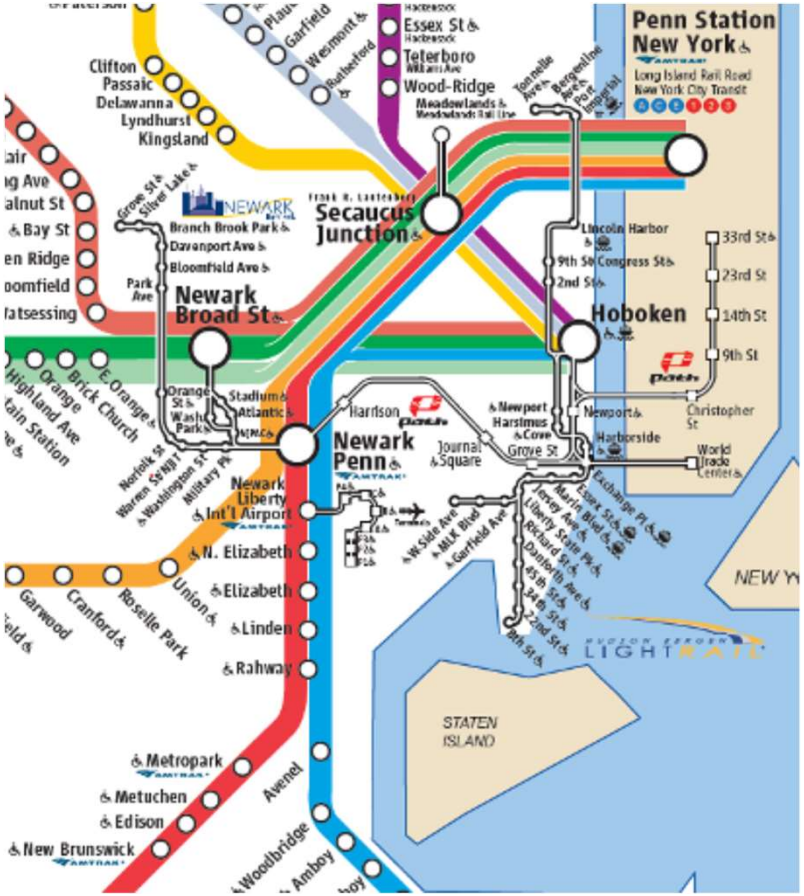
Background Information

- NEC between NPS and PSNY is the busiest segment of passenger railroad on the NEC and in the United States.
- Amtrak, which controls this segment of the NEC, and NJ TRANSIT share the NEC between NPS and PSNY.
- NJ TRANSIT, Amtrak and Long Island Rail Road share PSNY.

Capacity Analysis

- Multiple types of train services operate during the morning peak period on the NEC from Hunter Interlocking to PSNY:
  - Amtrak Acela Express
  - Amtrak, Northeast Regional, Keystone and Long Distance
  - NEC zone express and local
  - NEC / NJCL locals from South Amboy
  - NJCL Bay Head / Long Branch
  - RVL
  - Morris & Essex: Morristown, Gladstone, Montclair-Boonton

Train Service to New York



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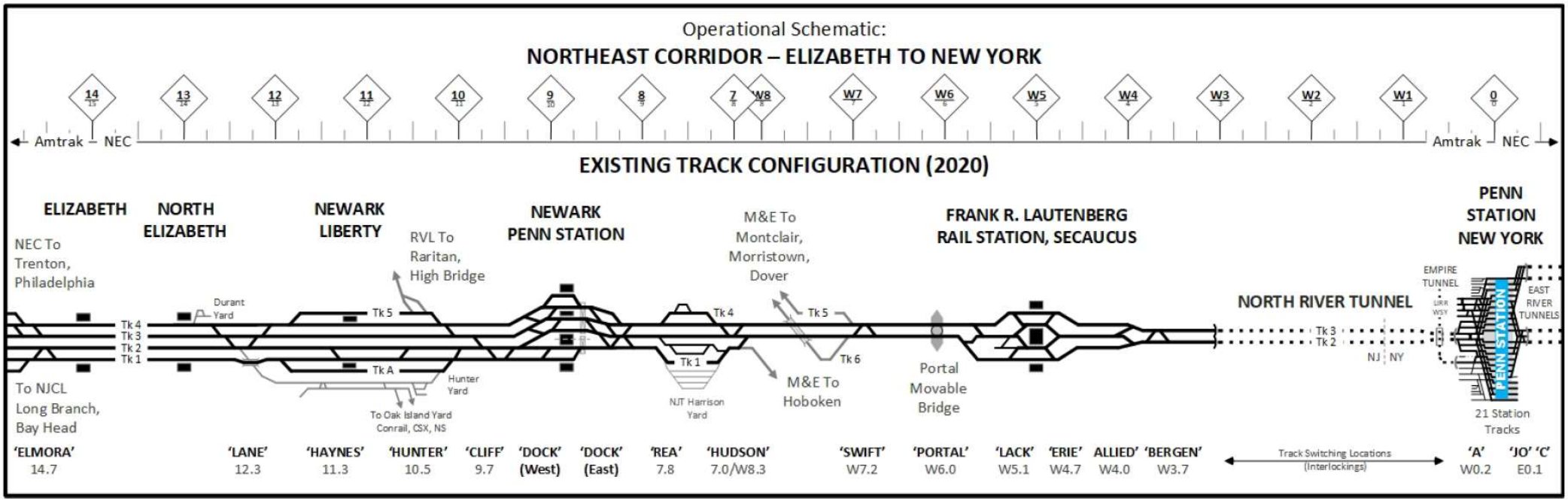
Train Service to New York



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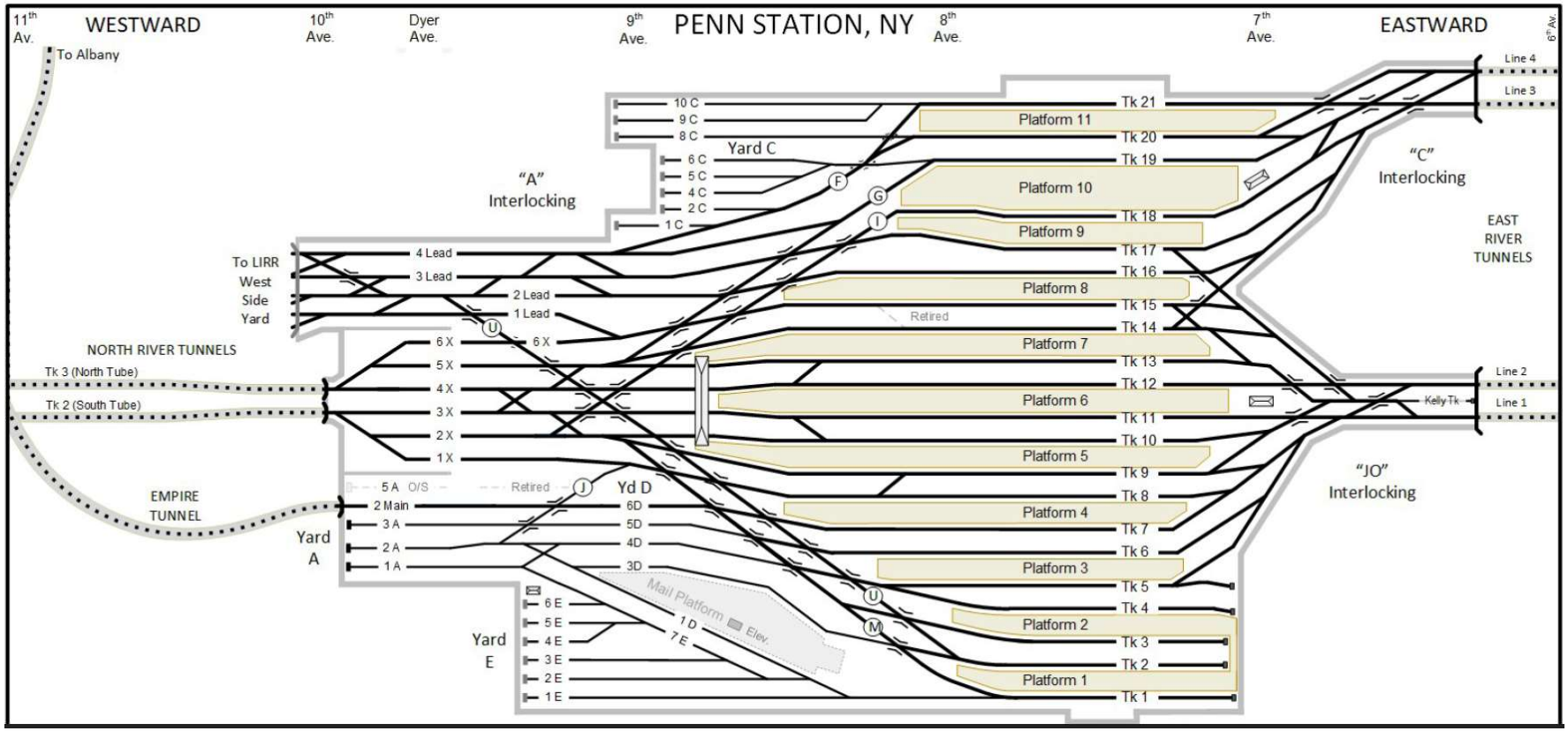
Penn Station NY Track Level



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Capacity Analysis

- Weekday Morning Peak Period:
  - Pre-PTC, during the peak hours of the weekday morning and evening peak periods this segment of the NEC was used to capacity by Amtrak, Long Island Rail Road (LIRR) and NJ TRANSIT.
  - The study concluded that the NEC and PSNY are at capacity during the peak of the morning peak period (7:00 am to 9:20 am), but:
    - Limited capacity available between NPS and PSNY during the shoulders of the peak period (prior to 7:00 am and after 9:20 am).

Capacity Analysis

- During weekends, due to essential tunnel maintenance activities, one of the two tracks under the Hudson River (known as the North River Tunnel) is removed from service and the remaining single track is used to capacity.
- Higher passenger volumes carried by longer NEC and NJCL trains than can be operated on the RVL, preclude re-allocation of weekend train slots.

Study Approach

- Options for full-time one-seat ride RVL trains to PSNY:
  - Extend RVL trains to PSNY when capacity is available during the shoulders of the morning peak period.
  - Re-allocate NEC / PSNY train capacity used by other NJ TRANSIT rail lines.
  - Expand system capacity.
- Reviewed these options and considered short, medium and long-term scenarios.

Study Approach

- Scenarios focused on weekday morning peak period (6:00 am to 10:00 am):
  - Ridership is more concentrated in the morning than during the evening peak period (4:00 pm to 8:00 pm).
- Plans for operations, infrastructure, and rail vehicles for each scenario developed for PSNY peak period operations for the RVL.

Analysis and Results: Scenario A

Scenario	Potential Rail Service	Forecasted Net Peak Period Ridership Change*	Capital Improvements and Estimated Capital Cost	Annual Operation & Maintenance Costs (2020$)	Implementation
Short-Term: Scenario A	3 existing RVL trains extended to PSNY in the shoulders of the morning peak period (arriving at PSNY before 7:00 am or after 9:20 am)	No significant change in ridership	Multi-level cars and dual mode locomotives needed to fulfill morning schedules not covered by extended trains and to provide longer trains for PSNY service; Raritan yard expansion **$125 Million**	**$4.6 Million**	Six Years

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Analysis and Results: Scenarios B, C

- Identified NEC and NJCL trains that could potentially be truncated within the intricate pattern of NJ TRANSIT and Amtrak train services
- RVL trains have limited slots at Hunter Interlocking to enter the NEC
  - **Scenario B slots coincide with NEC trains, but do not coincide with NJCL**
  - **Scenario C slots coincide with NEC and NJCL trains**
- Truncated NEC/NJCL train services would terminate at NPS, where passengers would transfer to other trains (NJ TRANSIT or PATH) for travel to Manhattan, increasing their travel time.
- RVL trains are shorter than truncated NEC/NJCL trains

Analysis and Results: Scenario B

Scenario	Potential Rail Service	Forecasted Net Peak Period Ridership Change*	Capital Improvements and Estimated Capital Cost	Annual Operation & Maintenance Costs (2020$)	Implementation
Short-Term: Scenario B	3 NEC trains terminate at NPS and 3 existing RVL trains use their slots to operate to PSNY in peak 2 hours (arriving at PSNY between 7:00 am and 9:20 am)	Ridership declines modestly	Same as Scenario A and station improvements to lengthen platforms to improve compatibility with longer trains $346-704 Million	$6.7 Million	Seven Years+

* Forecasts prepared using NJ TRANSIT's North Jersey Transit Demand Forecasting Model

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Analysis and Results: Scenario C

Scenario	Potential Rail Service	Forecasted Net Peak Period Ridership Change*	Capital Improvements and Estimated Capital Cost	Annual Operation & Maintenance Costs (2020$)	Implementation
Medium-Term: Scenario C	2 NEC & 2 NJCL trains terminate at NPS and 4 existing RVL trains use their slots to operate to PSNY in peak 2 hours (arriving at PSNY between 7:00 am and 9:20 am)	Ridership declines	Similar to Scenario B, plus additional multi-level cars and RVL station platform improvements, NPS passenger circulation upgrades, and Hunter Flyover $1.6 Billion	$6.7 Million	Eleven Years

* Forecasts prepared using NJ TRANSIT's North Jersey Transit Demand Forecasting Model

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Analysis and Results: Scenarios B, C

- Medium-Term Scenario C would be made possible by:
  - Construction of the Hunter Flyover, an important NEC congestion relief project where the RVL joins the NEC (estimated to cost almost $400 million).
  - NPS passenger circulation improvements
- RVL trains extended to PSNY would not markedly reduce travel time to Manhattan for RVL riders.
  - One-seat ride trains would stop at all RVL stations, eliminating current skip stop pattern due to the limited available train slots.
  - All RVL stations would have one-seat ride service.

Analysis and Results: Scenarios B, C

- One-seat ride RVL trains would provide less overall capacity for passengers boarding at NPS and at Secaucus Junction than the displaced trains.
    - RVL train lengths are limited by the configuration of the track connection to the NEC for Scenario B and by the train length limitation of the dual mode locomotive for Scenario C.
- Scenario B configuration, which requires cross track operation as trains approach NPS, would have greater potential for delayed service to PSNY.
- Potential to exacerbate overcrowding conditions on trains to PSNY and increase the potential for degraded on-time performance.

Analysis and Results: Scenarios B, C

- Each scenario would require increased annual funding for operation and maintenance and significant capital investment, including the purchase of new rail vehicles and construction of infrastructure needed to support peak period PSNY rail service.
- Capital investments would range from $125 million for Scenario A to $1.6 billion for Scenario C and would require about six to 11 years from program initiation to implementation, respectively.

Analysis and Results: Scenario D

Scenario	Potential Rail Service	Forecasted Net Peak Period Ridership Change*	Capital Improvements and Estimated Capital Cost	Annual Operation & Maintenance Costs (2020$)	Implementation
Medium-Term: Scenario D	Same morning peak service as Scenario C and weekend service	Ridership declines on weekdays, grows on weekends	Same as Scenario C and Hudson River Tunnel Project $15 Billion**	Gateway Program	Eleven Years

- Forecasts prepared using NJ TRANSIT's North Jersey Transit Demand Forecasting Model

**The full $15-30 Billion capital cost for Gateway Program improvements is not attributable only to RVL but to the entire NJ TRANSIT commuter rail system and Amtrak.

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Analysis and Results: Scenarios D, E

- Medium-Term Scenario D and Long-Term Scenario E would be made possible by Gateway Program projects.
- Phase I of the Gateway Program includes construction of a new Hudson River Tunnel and rehabilitation of the existing rail tunnel (the North River Tunnel) when funding is made available.
  - Phase I would not add weekday capacity to the rail system
  - Phase I would remove the single-track weekend constraint necessary for tunnel maintenance, providing an opportunity for NJ TRANSIT to operate weekend RVL one-seat ride service.
  - Medium-Term Scenario D includes the Scenario C rail service concept and would cost approximately $15 Billion.

Analysis and Results: Scenario E

Scenario	Potential Rail Service	Forecasted Net Peak Period Ridership Change*	Capital Improvements and Estimated Capital Cost	Annual Operation & Maintenance Costs (2020$)	Implementation
Long-term: Scenario E	Full-time direct service to PSNY	Significant ridership growth associated with full Gateway Program	Gateway Program Projects $30+ Billion**	Gateway Program	Undefined

* Forecasts not prepared by study

**The full $15-30 Billion capital cost for Gateway Program improvements is not attributable only to RVL but to the entire NJ TRANSIT commuter rail system and Amtrak.

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Analysis and Results: Scenario E

- Long-Term Scenario E includes the Gateway Program's PSNY expansion and other capacity expansion projects necessary to increase trans-Hudson rail service capacity.
  - Implementation of those projects, combined with NJ TRANSIT system and RVL improvements, would enable full-time direct service for the RVL and all other North Jersey rail lines without the re-allocation of NEC / PSNY train capacity.

Findings

- Addition of peak period shoulder trains is feasible with little system-wide impact.
- Scenarios which re-allocate NEC / PSNY capacity to the RVL would have negative customer impacts:
  - Reduce both rail system ridership and carrying capacity to PSNY.
  - Probable overcrowding at NPS and Secaucus Junction.
  - Potentially degrade on-time performance.
  - Provide a one-seat ride without markedly reducing travel times for RVL riders since direct trains would eliminate skip stop pattern, stopping at all RVL stations, due to limited available train slots.

Findings

- Each scenario would require Amtrak and Conrail collaboration and approval.
- Each scenario would require capital investment.
- Each scenario would require increased annual funding for operation and maintenance.
- Significant modification of existing train services would very likely require extensive public hearings.

Conclusions

- Some additional RVL one-seat ride service is feasible in the shoulders of the peak periods with significant capital investment.
- Re-allocation of NEC/NJCL slots to PSNY with RVL trains creates overcrowding, reduces trans-Hudson overall capacity and would degrade on-time performance.
- Capacity expansion projects, including the Gateway Program's Hudson Tunnel Project, and eventually expansion of PSNY, are critical for increasing peak hour and weekend one-seat ride service.

Questions / Discussion

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