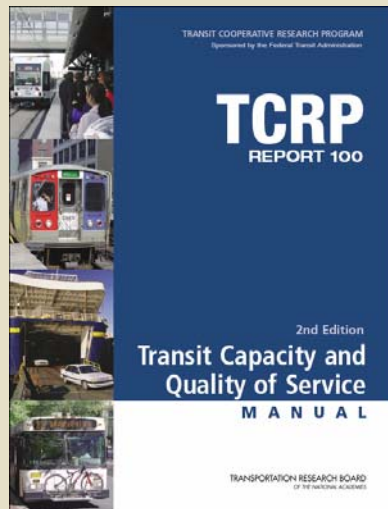


## Demand-Responsive Transportation in the TCQSM

Buffy Ellis  
KFH Group, Inc.



## Presentation Overview

- Brief introduction to the project
- DRT in the TCQSM, 1st Edition
- DRT in the TCQSM, 2nd Edition – Key Issues
- Quality of service and capacity framework for DRT in the 2nd Edition
- Questions to think about



## Project Overview

- Obtain user feedback on the TCQSM 2nd Edition (2003)
- Recommend additions, revisions, format
- Conduct gap-filling research
- Prepare TCQSM 3rd Edition
- Prepare information program



## TCQSM Webinar Series Objectives

- Provide background on TCQSM material for focus group and online survey participants
- Expand industry's awareness of the manual and its potential uses
- Lay groundwork for updated training material when the new manual is published (2013)



## Webinar Series Topics

- Overview of the TCQSM 2nd Edition
- Fixed Route Quality of Service
- Bus Transit Capacity
- Rail Transit Capacity
- Ferry Transit Capacity
- Stop, Station, and Terminal Capacity
- Demand-Responsive Transportation



## DRT in the TCQSM, 1st Edition



## Concepts

- Quality of Service
  - The measured or perceived performance of transit service, from the riders' perspective
- Capacity
  - Procedures provided for bus loading area, stop, and facility capacity
  - Ridership estimation outside 1st Edition scope
- How does DRT fit into these?



## DRT Treatment in the 1st Edition

- Various terms
- Uneven treatment
- Some QOS measures were specific for DRT; in other cases, the fixed-route measures were implied

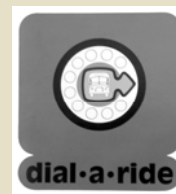


## DRT in the TCQSM, 2nd Edition



## Terminology

- Paratransit?
- Demand-responsive transportation?
- Dial-a-Ride?
- Specialized transportation?
- ADA Paratransit?



## Treatment of ADA Paratransit

- Should ADA paratransit services be included in QOS framework?
  - DRT definition could include ADA paratransit
  - ADA requirements included in other parts of manual
  - Service quality important to all riders
  
  - Service so highly prescribed by federal regulation that ADA paratransit might need separate treatment
  - ADA service thresholds might result in “poor” levels even though compliant
  - May be reluctance to use



## Quality of Service Framework

- Should DRT have a separate framework from fixed-route transit?

Fixed Route Service Measures			
	<i>Transit Stop</i>	<i>Route Segment</i>	<i>System</i>
<b>Availability</b>	Frequency	Hours of Service	Service Coverage
<b>Comfort &amp; Convenience</b>	Passenger Load	Reliability	Transit-Auto Travel Time
Demand-Responsive Service Measures			
<b>Availability</b>	Response Time	Service Span	
<b>Comfort &amp; Convenience</b>	On-Time Performance	Trips Not Served	DRT-Auto Travel Time



## Level of Service Measurement

- LOS measures: A through F?
- Key aspects of levels of service:
  - LOS ranges should reflect a traveler's point-of-view. LOS "A", therefore, is not necessarily representative of optimum conditions from a transit provider's point-of-view.
  - LOS "F" should represent an undesirable condition from a traveler's point-of-view. The service provider may choose to set higher standards based on their needs or policy goals.
- LOS measures for DRT: 1 through 8



## Availability Measure

- Response time: Minimum amount of time for scheduling and accessing a trip



### Tips for Using Corona Dial-A-Ride

To schedule your trip, please call (951) 734-7220 from 1 to 14 days in advance

Plan ahead and allow for flexibility

Have your pickup and drop-off addresses ready for reservation agent

Please be ready and visible to the coach operator during the 30 minute window (15 minutes before scheduled pick-up time and 15 minutes after)

Have the exact fare ready

For your convenience, Dial-A-Ride links to RTA bus stops and Metrolink stations



## Response Time – Levels of Service

LOS	Response Time	Comments
1	Up to 1/2 hour	Very prompt response; similar to exclusive-ride taxi service
2	More than 1/2 hour and up to 2 hours	Prompt response; considered immediate response for DRT service
3	More than 2 hours but still same day service	Requires planning but can still travel the day that trip is requested
4	24 hours in advance; next day service	Requires some advance planning
5	48 hours in advance	Requires more advance planning than next-day service
6	More than 48 hours in advance and up to 1 week	Requires advance planning
7	More than 1wk. in advance and up to 2 wks.	Requires considerable advance planning but may still work for important trips needed soon
8	More than 2 weeks or not able to accommodate trip	Requires significant advance planning, or service is not available at all

## Availability Measure

- **Service Span** : The number of hours during the day, and days per week, that DRT service is available.

### Service area for Sun Cities Area Transit System (SCAT)

#### Reservations: (623) 977-8363

SCAT provides service to the general public and persons with disabilities. A reservation clerk is available between 7:15 a.m. - 5 p.m. Voicemail available 24 hours a day.

#### Non-ADA Service Hours

For Sun City and Youngtown:  
Monday-Friday 7:15 a.m.-5 p.m.

For Sun City West (Medical Appointments Only):  
Monday-Friday 8 a.m.-4 p.m.

Saturdays and Holidays: 7:15 a.m.-3 p.m.

Saturdays and holidays are by reservation only. Passengers must call by 2 p.m. the previous Thursday to schedule transportation with SCAT.

#### ADA Service Hours

Monday-Friday 4:30 a.m.-9 p.m.

No ADA service on national holidays when fixed-route bus service is not provided.



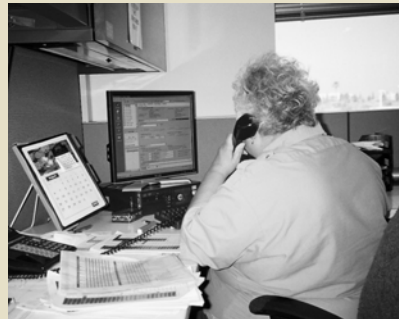


## Service Span – Levels of Service

Hours Per Day	Days Per Week						
	6-7	5	3 - 4	2	1	0.5*	< 0.5
≥16	LOS 1	LOS 2	LOS 4	LOS 5	LOS 6	LOS 7	LOS 8
12 - 15	LOS 2	LOS 3	LOS 4	LOS 5	LOS 6	LOS 7	LOS 8
9 - 11	LOS 3	LOS 4	LOS 4	LOS 6	LOS 6	LOS 7	LOS 8
4 - 8	LOS 5	LOS 5	LOS 5	LOS 6	LOS 7	LOS 7	LOS 8
< 4	LOS 6	LOS 6	LOS 6	LOS 7	LOS 8	LOS 8	LOS 8

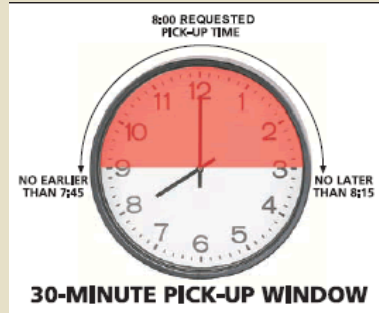
## Comfort & Convenience

- Reliability – assessed through two measures
  - On-time performance
  - Trips not served



## Reliability

- On-time performance: Measures whether DRT vehicle arrives at scheduled/promised time



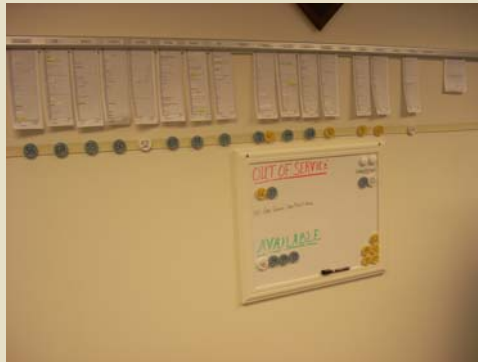
## On-Time Performance – Levels of Service

LOS	On-Time Percentage	Comments*
1	97.5-100.0%	1 late trip/month
2	95.0-97.4%	2 late trips/month
3	90.0-94.9%	3-4 late trips/month
4	85.0-89.9%	5-6 late trips/month
5	80.0-84.9%	7-8 late trips/month
6	75.0-79.9%	9-10 late trips/month
7	70.0-74.9%	11-12 late trips/month
8	<70.0%	More than 12 late trips/month

\*Based on 30-minute on-time window.  
Assumes user travels by DRT round trip each weekday for one month, with 20 weekdays/month.

## Reliability (cont'd.)

- Trips not served – Includes two components:
  - Trips turned down
  - Missed trips



## Trips Not Served – LOS Thresholds

LOS	Percent Trips Not Served	Comments*
1	0 – 1%	High quality DRT service; no trip denials or missed trips within month
2	>1% - 2%	1 denial or missed trip within month
3	>2% - 4%	1 to 2 denials or missed trips within month
4	>4 – 6%	2 denials or missed trips within month
5	>6 – 8%	3 denials or missed trips within month
6	>8% - 10%	4 denials or missed trips within month
7	>10% - 12%	5 denials or missed trips within month
8	>12%	More than 5 denials or missed trips within month

\*Assumes user travels by DRT round trip each weekday for one month, with 20 weekdays/month.

## Comfort and Convenience

- DRT travel time - compares DRT travel time to auto travel time



## DRT – Auto Travel Time – Levels of Service

LOS	Travel Time Difference (min)	Comments
1	≤0	The same or slightly faster by DRT as by automobile
2	1-10	Just about the same or slightly longer by DRT
3	11-20	Somewhat longer by DRT
4	21-30	Satisfactory service
5	31-40	Up to 40 minutes longer by DRT than by automobile
6	41-50	May be tolerable for users who are transit dependent
7	51-60	May indicate a lot of shared riding or long dwell times
8	>60	From most users' perspectives, this is "too lengthy"



## DRT Capacity

- TCQSM's framework for transit capacity does not work for DRT
- DRT capacity relates to number of vehicles and vehicle service hours needed to meet expected ridership demand



## Questions to Think About



## Questions to Think About

- Should ADA paratransit be included as part of DRT for quality of service assessment?
- If ADA paratransit is not included as part of DRT, should it be treated separately in the TCQSM?
- What about the scale used for LOS: 1–8, rather than A–F? Is LOS even appropriate for DRT?



## Questions to Think About

- If LOS is used, should adjustments be made to measures?
  - Travel time: Should DRT travel time be compared to auto travel time (similar to the current measure for fixed-route bus), or to fixed-route bus travel time?
  - Should there be a service coverage measure?



## We Want Your Input on the TCQSM!

- Take our online survey to help shape the 3<sup>rd</sup> Edition's content
- Stay involved with the project
  - Give us your e-mail address after completing the survey and we'll keep you informed of future opportunities to provide input
- Do you go to the Transportation Research Board's Annual Meeting?
  - Attend the meeting of the Transit Capacity and Quality of Service Committee (AP015)

