

How is Equity Calculated when Adding or Reducing Transit Service?

The adopted Service Guidelines (Ordinance 19367) use equity as a factor when prioritizing transit routes for additions or reductions. An equity score is calculated for each bus stop and each route using the metrics described on the left. A hypothetical example, for Imaginary Route #IR, is on the right. The Service Guidelines criteria for additions or reductions to service are described below.

Equity Metrics

EQUITY PRIORITY AREA SCORE (EPAS)

Scale: 1-5 points **Based on:** Census block group surrounding each bus stop

Used for: The EPAS forms the basis for the other two equity scores (the EPS and OIS). The EPAS is also used to prioritize areas for flexible services.

Calculated by: Each bus stop is assigned a score of 1-5 based on weighting the demographic data of the census block group it is in:

Population that is non-white or Hispanic	40%
Population living 200% below the federal poverty level	30%
Population that is foreign-born	10%
Limited-English speaking households	10%
Population living with a disability	10%

A higher EPAS means a higher equity need.

EQUITY PRIORITIZATION SCORE (EPS)

Scale: 0-10 points **Based on:** Each bus route

Used for: The EPS is used as a factor in identifying the service level target for each route, as well as its priority level for investment when adding service as part of the Service Guidelines' Priority #3 (Service Growth). The three factors used to prioritize service additions (equity, land use, and geographic value) are described below.

Calculated by: The EPS starts with the average EPAS for all stops on a bus route. This average is then ranked against all the averages from all other routes, and points of 0-10 are assigned to each route. The higher the EPS (average or points), the higher the equity need for that route.

OPPORTUNITY INDEX SCORE (OIS)

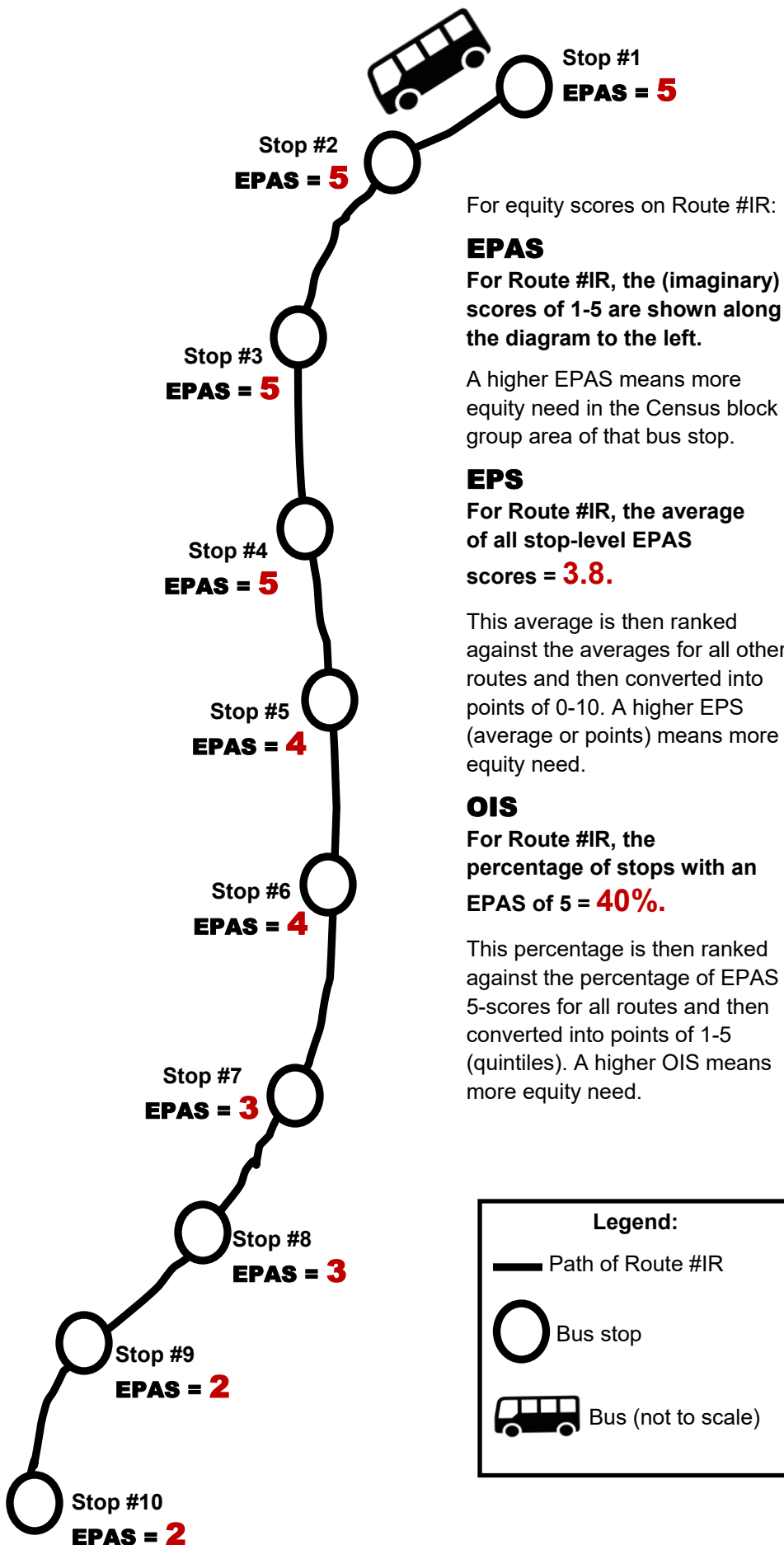
Scale: 1-5 points **Based on:** Each bus route

Used for: When transit service must be reduced, the OIS is used as the equity score when determining the reduction priority for a route. The factors used in prioritizing service reductions (productivity and equity) are described below.

Calculated by: The OIS starts as the percentage of all EPAS bus stop scores of 5 for a given route. This percentage is then ranked against the percentage of EPAS 5-scores for all other routes, and points of 1-5 are assigned, dividing routes into quintiles. The higher the OIS, the higher the equity need for that route.

Example: Imaginary Route #IR

This is a hypothetical of an imaginary route (#IR) with 10 stops, showing how the EPAS, EPS, and OIS scores are calculated.



For equity scores on Route #IR:

EPAS
For Route #IR, the (imaginary) scores of 1-5 are shown along the diagram to the left.

A higher EPAS means more equity need in the Census block group area of that bus stop.

EPS
For Route #IR, the average of all stop-level EPAS scores = **3.8**.

This average is then ranked against the averages for all other routes and then converted into points of 0-10. A higher EPS (average or points) means more equity need.

OIS
For Route #IR, the percentage of stops with an EPAS of 5 = **40%**.

This percentage is then ranked against the percentage of EPAS 5-scores for all routes and then converted into points of 1-5 (quintiles). A higher OIS means more equity need.

How is service added?

The adopted Service Guidelines include three priorities to add service:

- Priority #1 = Reduce Crowding:** add service to overcrowded routes
- Priority #2 = Improve Reliability:** add service to routes that run late
- Priority #3 = Grow Service:** add service to meet target service levels

When service is added under Priority #3, the Service Guidelines use three factors to rank routes to establish what is the target for future service and how additional service should be added over time:

Factor & Measures	Weighting (What is target)	Prioritization (How reach target)
Equity	25%	#1
EPS	(10 points)	
Land Use	50%	#2
* Households within 1/4 mile	(20 points)	
* P&R stalls within 1/4 mile		
* Jobs within 1/4 mile		
* Low-income jobs within 1/4 mile		
* Enrolled students at high school & college within 1/4 mile		
Geographic Value	25%	#3
* Connection between regional growth centers or activity centers or manufacturing/industrial centers	(10 points)	

How is service reduced?

The adopted Service Guidelines use productivity and equity to identify priorities for reduction when service must be reduced.

Equity uses the OIS. **Productivity** uses two measures:

- Rides/platform hour** measures the number of riders who board a bus relative to the total number of hours the vehicle operates.
- Passenger miles/platform mile** measures the total miles riders travel on a route relative to the total miles the vehicle operates.

There are six priorities for reduction (in order):

- Routes in bottom 25% on 2 productivity measures, OIS 3 or less
- Routes in bottom 25% on 2 productivity measures, OIS 4 or 5
- Routes in bottom 25% on 1 productivity measure, OIS 3 or less
- Routes in bottom 25% on 1 productivity measure, OIS 4 or 5
- Routes in bottom 50% on 1-2 productivity measures, OIS 3 or less
- Routes in bottom 50% on 1-2 productivity measures, OIS 4 or 5