

# Proposed Transportation Control Measure Substitution of Transit Projects (FTIP Project IDs: ORA130099 and ORA030612) with New Main Street Bravo! Express Bus Service

## Introduction

The Orange County Transportation Authority (OCTA) previously committed to two capital improvement projects within Orange County: Paratransit Vehicle Expansion (FTIP Project ID: ORA130099) and the Placentia Transit Station (FTIP Project ID: ORA030612). These projects are included as committed TCM's in SCAG's 2020 RTP/SCS (Connect SoCal), 2021 FTIP, and SCAQMD's 2016 South Coast AQMP/Ozone SIPs. Below are the summary project descriptions of these two committed TCMs. Their 2021 FTIP project sheets including detailed project information are included in **Attachment A**:

- The Paratransit Vehicle Expansion involved the purchase of fifteen gas/diesel buses for use in paratransit service. These vans would have expanded OCTA's existing paratransit fleet. However, consistent with the OCTA Bus Fleet Plan, these expansion vehicles are no longer needed in the near term. This is particularly true following the impacts of the coronavirus pandemic which has resulted in a reduction in the use of paratransit service. The vehicles were planned to be purchased by December 2022.
- The Placentia Transit Station will add a new transit station in the City of Placentia, near the intersection of Crowther Avenue and Melrose Street. It will be served by Metrolink's existing 91 Line. Completion of this TCM project has been delayed beyond the committed completion date due to protracted negotiations with the BNSF Railway, which owns the tracks that will serve the station. Construction was originally planned to be complete by December 2022.

These two committed TCMs will be delayed beyond the scheduled completion dates. One substitute TCM project involving a new 10-mile express bus line is now proposed as a replacement TCM to the previously committed projects.

## Description of Proposed Substitute TCM Project

OCTA is proposing a substitute project as a replacement to these previously committed TCMs. The recommended substitute project consists of a new 10-mile Main Street Bravo! express bus service that will follow Main Street between the Anaheim Regional Transportation Intermodal Center and the South Coast Metro district in the City of Costa Mesa. The project will improve transit access along a corridor with high existing transit demand. Traffic signal operations are also expected to be improved along the corridor, which will benefit transit as well as other vehicles.

The substitute project will be implemented by December 2022. Current funding, as part of Measure M2 (Project P), will be used for this project. Project descriptions are listed below and a map of the locations of both the committed and substitute projects is in **Attachment B**. Note that this proposed project is not in the SCAG's 2021 FTIP yet but will be amended into the FTIP upon completion of the TCM substitution.

### Compliance with TCM Substitution Requirements

- **Equivalent Emissions Reduction:** OCTA has analyzed the countywide emissions of the substitute TCM project relative to those of previously committed TCM projects. The replacement TCM project will provide equivalent emission reductions. OCTA used the Orange County Transportation Analysis Model 5.0 (OCTAM) for the analysis of the alternatives. The following three sections document the OCTAM Model Information, the Emissions Analysis Methodology, and the Emissions Analysis Findings.
- **Similar Geographic Area:** The substitute TCM project and the previously committed TCM projects are both located in the Orange County portion of the South Coast Air Basin.
- **Full Funding:** Current funding is available for the replacement TCM project as documented under the previous section Description of Proposed Substitute TCM Project.
- **Similar Time Frame:** The proposed substitute TCM project will be operational by December 2022, equivalent to the schedule of the previously committed TCM projects.
- **Timely Implementation:** The proposed substitution is the means by which the obstacles to implementation of previously committed TCM projects is being overcome.
- **Legal Authority:** OCTA has legal authority and personnel to implement and operate the substitute TCM project.

### OCTAM Model Information

OCTAM is a four-step (trip generation, trip distribution, mode choice, and trip assignment), trip-based travel demand model built on the TransCAD platform. The current model version 5.0 uses 2010 Census data and the SCAG household travel survey to help calibrate the model. The assumptions used in the current model for future forecasting are based on demographic projections from Orange County Projections 2018 and the SCAG RTP.

OCTAM forecasts travel demand with a base year of 2016 and a future forecast year of 2045. It is consistent with SCAG's regional travel demand model as it incorporates the most recent approved socio-economic data for Orange County and the surrounding region at the time it was developed.

### Emissions Analysis Methodology

The emissions were calculated for the future no project, previously committed TCM projects, and the proposed substitute projects. A multi-step approach was used that combined OCTAM and EMFAC. The following process was used:

Step 1: Obtain daily vehicle miles traveled (VMT) and speed data for freeways and arterials from OCTAM. Three alternatives for forecast year 2045 were run using OCTAM as part of this study. The coding of all alternatives was consistent with OCTAM modeling practices and used the 2020 RTP/SCS network. **Attachment C** includes additional modeling details and summary of modeling files. **Attachment D** includes 2045 OCTAM model output summary statistics for Orange County.

The previously committed TCM projects as described earlier were modeled with OCTAM in an alternative referred to as the "Original Committed Projects" analysis.

The "With Proposed Substitute" analysis includes the addition of the substitute TCM project and the removal of the previously committed TCM projects. The substitute TCM project is expected to improve transit service along a corridor with high existing demand.

For comparison purposes, a third alternative was modeled that assumed the removal of the previously committed TCM projects with no substitute added. This is referred to as the "With No Projects" analysis.

All three alternatives were modeled separately using OCTAM and post-processed using the National Cooperative Highway Research Program (NCHRP) 255 process. This process provides a standard methodology to refine forecasted volumes on links based on a combination of base year traffic counts, base year model estimates, and forecasted model estimates using incremental adjustments. The output of the travel demand model and post-processing includes travel information for all three alternatives. Loaded link information, intrazonal travel speeds, and intrazonal travel volumes were extracted for all time periods for all alternatives.

Step 2: The Emission Factors (EMFAC2017) model was developed by the California Air Resources Board and is used throughout California to calculate emission from motor vehicles, such as passenger cars and heavy-duty trucks, operating on freeways and local roads for typical summer, winter, and annual conditions. EMFAC model outputs include total emissions for all criteria pollutants for all Orange County.

A spreadsheet tool has been created to modify EMFAC input data to reflect the results of OCTAM runs. The tool was run for the base year and forecast year 2045 using the extracted information from Step 1 as input to update the VMT and vehicle speed data needed by EMFAC. This process was performed multiple times for each modeled alternative in order to analyze conditions for summer, winter, and averaged annual timeframes.

Step 3: Compare the emissions output from Steps 2 and 3 between the alternatives to identify the emissions-related improvements from the proposed substitute TCM projects.

Note that interpolation of travel activity data between base year 2016 and forecast year 2045 (horizon year) results were used to estimate the emissions for interim year 2022 (completion year) and 2037 (2015 8-hour ozone standard attainment year).

### Emissions Analysis Findings

The projected emission from the “Originally Committed Projects” were compared with those of the “With Proposed Substitute” projects using the methodology described in the previous section. The results demonstrate that the proposed substitute TCM will yield less than or equivalent amounts of emissions compared with the previously committed TCM for all criteria pollutants for all milestone years. Emissions of all applicable criteria pollutants (Ozone – ROG & NO<sub>x</sub>, CO, PM<sub>2.5</sub>, and PM<sub>10</sub>) for the three forecast years (2022, 2037, and 2045) are summarized in the tables below.

## Year 2022

### Emission Reductions (Summer) - Ozone (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.1
NOx	0.0	- 0.3

### Emission Reductions (Winter) - Carbon Monoxide, Nitrogen Dioxide (kg/day)

	Original Committed Projects	With Proposed Substitute
NOx	0.0	- 0.2
CO	0.0	- 1.4

### Emission Reductions (Annual) - PM<sub>10</sub>, PM<sub>2.5</sub> (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.1
NOx	0.0	- 0.2
PM10	0.0	- 0.1
PM2.5	0.0	0.0

## Year 2037

### Emission Reductions (Summer) - Ozone (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.3
NOx	0.0	- 0.8

### Emission Reductions (Winter) - Carbon Monoxide, Nitrogen Dioxide (kg/day)

	Original Committed Projects	With Proposed Substitute
NOx	0.0	- 0.9
CO	- 0.1	- 4.7

### Emission Reductions (Annual) - PM<sub>10</sub>, PM<sub>2.5</sub> (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.3
NOx	0.0	- 0.9
PM10	0.0	- 0.4
PM2.5	0.0	- 0.1

## Year 2045

### Emission Reductions (Summer) - Ozone (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.5
NOx	0.0	- 1.1

### Emission Reductions (Winter) - Carbon Monoxide, Nitrogen Dioxide (kg/day)

	Original Committed Projects	With Proposed Substitute
NOx	0.0	- 1.1
CO	- 0.1	- 6.5

### Emission Reductions (Annual) - PM<sub>10</sub>, PM<sub>2.5</sub> (kg/day)

	Original Committed Projects	With Proposed Substitute
ROG	0.0	- 0.4
NOx	0.0	- 1.2
PM10	0.0	- 0.5
PM2.5	0.0	- 0.2

In summary, the modeling results demonstrate that the proposed substitute TCM will yield an equivalent or better amount of emissions compared with the previously committed TCM for all criteria pollutants for all milestone years.

#### Attachments

- A. 2021 FTIP Project Sheets of the Three Committed TCM Projects ( ORA130099 and ORA030612)
- B. Map of the Two Committed TCM Projects ORA130099 and ORA030612) and the Proposed Substitute TCM Project
- C. Additional Modeling Details and Summary of Modeling Files
- D. 2045 OCTAM Model Output Summary Statistics for Orange County

**2021 FTIP PROJECT SHEETS**

**OCTA**

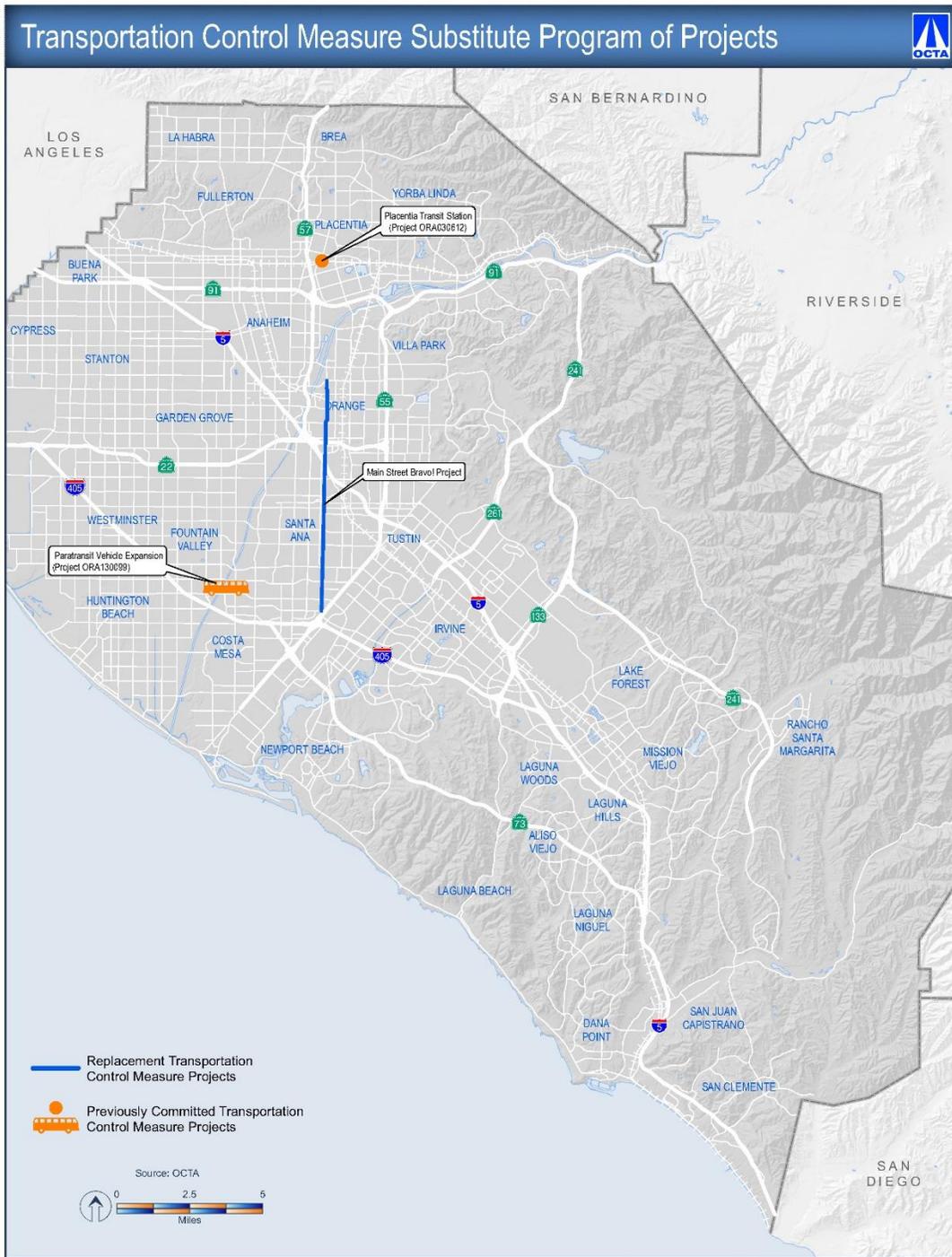
**2023 Federal Transportation Improvement Program (\$000)**

TIP ID: <b>ORA130099</b> SCAG RTP Project #: <b>2TR0703</b> PPNO: EA Number: IFAS #:		Implementing Agency: <b>Orange County Transportation Authority (OCTA)</b> Project Title: <b>Purchase (15) Expansion Paratransit Vans (OCTA)</b> Project Description: <b>Purchase (15) Expansion Paratransit Vans (OCTA)</b>																															
System: <b>Transit</b> Route: Postmile:	Program Code: <b>PAN03 - PARATRANSIT VEHICLES-EXPANSION-GAS/DIESEL</b> Environmental Document: <b>CATEGORICALLY EXEMPT - 10/02/2019</b> Conformity Category: <b>TCM Committed</b> Total Estimate: <b>\$2,741</b> Air Basin: <b>SCAB</b> Project Completion Date: <b>12/31/2022</b> Current Implementation Status: <b>No Project Activity - 12/08/2011</b> Project Manager: <b>William Dineen - (714) 560-5917</b> Last Modified By: <b>Heidi Busslinger on 10/08/2021</b> Administrative Comments: <b>MLE1@OCTA.NET CTC Only 10/03/2019 20/21 includes potential 21/22 \$439K, 22/23 \$513K, 23/24 \$525K</b>	<table border="1"> <thead> <tr> <th>Fiscal Year</th> <th>Revenue Source</th> <th>Engineering</th> <th>Right of Way</th> <th>Construction</th> <th>Total Revenue</th> </tr> </thead> <tbody> <tr> <td>18/19</td> <td>IDA - Transportation Development Act</td> <td></td> <td></td> <td>\$353</td> <td>\$353</td> </tr> <tr> <td>19/20</td> <td>IDA - Transportation Development Act</td> <td></td> <td></td> <td>\$481</td> <td>\$481</td> </tr> <tr> <td>2021</td> <td>IDA - Transportation Development Act</td> <td></td> <td></td> <td>\$1,907</td> <td>\$1,907</td> </tr> <tr> <td></td> <td></td> <td>\$0</td> <td>\$0</td> <td>\$2,741</td> <td>\$2,741</td> </tr> </tbody> </table>		Fiscal Year	Revenue Source	Engineering	Right of Way	Construction	Total Revenue	18/19	IDA - Transportation Development Act			\$353	\$353	19/20	IDA - Transportation Development Act			\$481	\$481	2021	IDA - Transportation Development Act			\$1,907	\$1,907			\$0	\$0	\$2,741	\$2,741
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Last Revised: <b>Adoption 23-00 - OPEN</b>		Total Programmed: <b>\$2,741</b>																															

**OCTA**

**2021 Federal Transportation Improvement Program (\$000)**

TIP ID: <b>ORA030612</b> SCAG RTP Project #: <b>ORA030612</b> PPNO: EA Number: IFAS #:		Implementing Agency: <b>Orange County Transportation Authority (OCTA)</b> Project Title: <b>PLACENTIA TRANSIT STATION - E OF SR-57 AND MELROSE ST AND N OF CROWTHER AVE. CONSTRUCT NEW METROLINK STATION AND RAIL SIDING PPNO 9514</b> Project Description: <b>PLACENTIA TRANSIT STATION - E OF SR-57 AND MELROSE ST AND N OF CROWTHER AVE. CONSTRUCT NEW METROLINK STATION AND RAIL SIDING PPNO 9514</b>																																																							
System: <b>Transit</b> Route: Postmile: <b>0 to 0</b>	Program Code: <b>TRNH6 - PASSENGER STATIONS/FACILITIES-NEW</b> Environmental Document: <b>CATEGORICALLY EXEMPT - 01/01/2009</b> Conformity Category: <b>TCM Committed</b> Total Estimate: <b>\$34,825</b> Air Basin: <b>SCAB</b> Project Completion Date: <b>12/31/2022</b> Current Implementation Status: <b>ROW Acquisition - 02/14/2020</b> Project Manager: <b>Ben Ku - (714) 560-5473</b> Last Modified By: <b>Ben Ku on 05/18/2021</b> Administrative Comments: <b>MLE1@OCTA.NET CTC Only 10/03/2019 \$8.3M in FTA transferred to ORA120318, replaced with \$8.3M in CMAQ. Removed \$8.3M in CMAQ and replaced with Agency. Now Agency funds are 91 Express Lane Excess Toll Revenues. Apportionment Code M003 Agency Funds are 91 Express Lane Excess Toll Revenues</b>	<table border="1"> <thead> <tr> <th>Fiscal Year</th> <th>Revenue Source</th> <th>Engineering</th> <th>Right of Way</th> <th>Construction</th> <th>Total Revenue</th> </tr> </thead> <tbody> <tr> <td>06/07</td> <td>STIP AC RIP</td> <td>\$2,500</td> <td></td> <td></td> <td>\$2,500</td> </tr> <tr> <td>11/12</td> <td>S307 - (FHWA Transfer Funds)</td> <td>\$50</td> <td></td> <td></td> <td>\$50</td> </tr> <tr> <td>11/12</td> <td>PTMSEA - Public Trans Modernization Imp &amp; Sec</td> <td>\$400</td> <td></td> <td></td> <td>\$400</td> </tr> <tr> <td>14/15</td> <td>ORAM2TR - Orange Co. Measure M2-Transit</td> <td>\$100</td> <td></td> <td>\$7,900</td> <td>\$8,000</td> </tr> <tr> <td>18/19</td> <td>AGENCY - Agency</td> <td></td> <td></td> <td>\$14,300</td> <td>\$14,300</td> </tr> <tr> <td>05/06</td> <td>CITY - City Funds</td> <td>\$1,475</td> <td>\$3,700</td> <td></td> <td>\$5,175</td> </tr> <tr> <td>14/15</td> <td>CITY - City Funds</td> <td></td> <td></td> <td>\$4,400</td> <td>\$4,400</td> </tr> <tr> <td></td> <td></td> <td>\$4,625</td> <td>\$3,700</td> <td>\$26,600</td> <td>\$34,825</td> </tr> </tbody> </table>		Fiscal Year	Revenue Source	Engineering	Right of Way	Construction	Total Revenue	06/07	STIP AC RIP	\$2,500			\$2,500	11/12	S307 - (FHWA Transfer Funds)	\$50			\$50	11/12	PTMSEA - Public Trans Modernization Imp & Sec	\$400			\$400	14/15	ORAM2TR - Orange Co. Measure M2-Transit	\$100		\$7,900	\$8,000	18/19	AGENCY - Agency			\$14,300	\$14,300	05/06	CITY - City Funds	\$1,475	\$3,700		\$5,175	14/15	CITY - City Funds			\$4,400	\$4,400			\$4,625	\$3,700	\$26,600	\$34,825
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Last Revised: <b>Amendment 21-05 - APPROVED</b>		Total Programmed: <b>\$34,825</b>																																																							



### **Additional Modeling Details and Summary of Modeling Files**

OCTAM was used to model the two project alternatives to develop future 2045 forecasts of VMT by speed bin. The following provides details on the modeled alternatives:

- TCMBase - No project alternative 2045
  - With the two committed TCM projects (ORA130099 and ORA030612)
  - Without the proposed substitute Bravo! express bus project
- TCMOCTARep - With project alternative 2045
  - Without the two committed TCM projects (ORA130099 and ORA030612)
  - With the proposed substitute Bravo! express bus project

The highway and transit networks for each scenario includes the input scenario assumptions. The four fixed-format binary files in the asn-LVOL subdirectories contain the post-processed forecast outputs.

Key data fields in the TransCAD output:

- AB\_LN/BA\_LN: Number of lanes in the AB/BA directions
- PK\_Headway/OP\_headway: Transit headways in minutes for the peak and off-peak time periods.
- AB\_LVOL/BA\_LVOL: Post-processed forecast volumes in the AB/BA directions

The modeling output files are attached to this correspondence. Each scenario is packaged in a separate zip file:

- TCMBase.zip - No project alternative
- TCMOCTARep.zip - With project alternative

The forecast outputs were post-processed per the NCHRP-255 approach. EMFAC2017 was then used to forecast emissions using VMT by speed bin from the two OCTAM runs.

**ATTACHMENT D****2045 OCTAM Model Output Summary Statistics for Orange County**

	<b>Original Committed Projects</b>	<b>With Proposed Substitute</b>
<b>Total Population</b>	3,534,600	3,534,600
<b>Household Population</b>	3,488,500	3,488,500
<b>Total Dwelling Units</b>	1,154,400	1,154,400
<b>Employment</b>	1,980,400	1,980,400
<b>Daily Transit Trips</b>	152,000	153,000
<b>Total Vehicle Hours of Delay</b>	464,900	464,600
<b>Daily Vehicle Hours Traveled</b>	2,511,300	2,510,600
<b>Daily Vehicle Miles Traveled</b>	83,735,700	83,726,400
<b>Daily Peak Vehicle Hours Traveled</b>	1,620,200	1,619,700
<b>Daily Peak Vehicle Miles Traveled</b>	47,065,600	47,054,400
<b>Total Person Hours of Delay</b>	634,000	633,600
<b>Daily Person Hours Traveled</b>	3,424,600	3,423,700
<b>Daily Person Miles Traveled</b>	114,188,100	114,174,900
<b>Daily Peak Person Hours Traveled</b>	2,180,100	2,179,400
<b>Daily Peak Person Miles Traveled</b>	63,330,600	63,316,100
<b>Daily Average Speed (mph)</b>	33.3	33.3
<b>Avg. Spd. - Freeways Peak</b>	39.8	39.8
<b>Avg. Spd. - Freeway AM Pk Period</b>	38.3	38.3
<b>Avg. Spd. - Freeway PM Pk Period</b>	40.9	40.9
<b>Avg. Spd. - Arterials Peak</b>	25.1	25.1
<b>Avg. Spd. - Arterial AM Pk Period</b>	24.2	24.2
<b>Avg. Spd. - Arterial PM Pk Period</b>	25.7	25.7
<b>Avg. Spd. - All Facilities Peak</b>	31.6	31.6
<b>Avg. Spd. - All Facilities - AM Pk Period</b>	30.6	30.6
<b>Avg. Spd. - All Facilities PM Pk Period</b>	32.3	32.3