## Large Gas Stations with Convenience Stores

For this land use ITE format average trip generation rates and regression equations based on a single variable were determined. ITE uses trips per 1,000 ft2 of convenience store for land use 853 Convenience Market with Gas Pumps, and trips per number of fueling positions for land use 945 Service Station with Convenience Market. Together these represented the most appropriate variables for our study sites. A series of multi-variable regression equations were also developed.

The figure below shows average rate findings for Convenience Market with Gas Pumps, as well as values from ITE and our literature review for comparison. Square footage results show daily and PM peak rates higher than previous studies. This suggests that the larger stores and greater associated amenities are pulling in significantly more traffic than traditional stations. Trip generation rates per vehicle fueling position were also higher than most previous studies both daily and during the PM peak.

The analysis shows that when using convenience market size, the 2012 FDOT study has consistently higher trip generation rates. When comparing past studies using fueling positions the differences are not as consistent.

When conducting analysis ITE uses only one independent variable at a time. However, due to the increasing uses that are present at new developments a more detailed, multivariable analysis is needed. For this study analysis was done for both square footage of convenience space and number of fueling positions. For this analysis the two following equations were used:

$$Trips (rounded)=256.7\*FP-144.5\*kft2$$

$$Trips \left(rounded\right)=12.3\*FP+15.5\*kft2$$

In these equations:

FP: fueling positions

kft2: 1,000 square feet gross floor area





The range of pass-by trip rates was 65-84 percent with an average of 78 percent. This is significantly higher than the average of 66 percent found in the ITE Handbook for the Convenience Market with Gas Pumps land use. However, the average of only Florida sites from 2001 ITE Trip Generation Handbook is 76 percent, and our results were quite similar. The consistency of this data suggests that future developments could reasonably assume about a 77 percent pass-by rate for sites of this type.

