

## Minimizing Vehicular Traffic via Integrated Land Use Development: A Heuristic Optimization Approach

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**Abstract :** The current traffic impact assessment methodology and environmental quality review process for approval of land development project are conventional, stagnant, and one-dimensional. The environmental review policy and procedure lacks in providing the direction to regulate or seek alternative land uses and sizes that exploits the existing or surrounding elements of built environment ('4 D's' of development - Density, Diversity, Design, and Distance to Transit) or smart growth principles which influence the travel behavior and have a significant effect in reducing vehicular traffic. Additionally, environmental review policy does not give directions on how to incorporate urban planning into the development in ways such as incorporating non-motorized roadway elements such as sidewalks, bus shelters, and access to community facilities. This research developed a methodology to optimize the mix of land uses and sizes using the heuristic optimization process to minimize the auto dependency development and to meet the interests of key stakeholders. A case study of Willets Point Mixed Use Development in Queens, New York, was used to assess the benefits of the methodology. The approved Willets Point Mixed Use project was based on maximum envelop of size and land use type allowed by current conventional urban renewal plans. This paper will also evaluate the parking accumulation for various land uses to explore the potential for shared parking to further optimize the mix of land uses and sizes. This research is very timely and useful to many stakeholders interested in understanding the benefits of integrated land uses and its development.

**Keywords :** traffic impact, mixed use, optimization, trip generation

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