APPENDIX V

INDIRECT IMPACT ANALYSIS

Tier 2 Environmental Impact Statement

I-69 Section 6

Martinsville to Indianapolis

September 22, 2017

ANALYSIS OF INDIRECT IMPACTS

The analysis of indirect impacts in the Final Environmental Impact Statement (FEIS) for I-69 Section 6 utilized the Year 2011 National Land Cover Data (NLCD) set.[1] This is the most current available NLCD data set. For each Traffic Analysis Zone (TAZ), the following NLCD categories were identified:

- Developed
- Unusable
- Agriculture/other in floodplain
- Forest in floodplain
- Available agricultural/other land
- Available forest

The sum of the available agricultural/other land and the available forest gave the total available land as of the present time for each TAZ. For those TAZs which have no available agricultural/other land or forest land, the total available land would be zero.

The Land Use Panel played a key role in forecasting future land use for the indirect impact analysis. Detailed information on the Land Use Panel, its composition, and responsibilities can be found in **Section 5.24.3** of the Section 6 FEIS**.**

The Land Use Panel met in September 2015 to review year 2045 employment and household forecasts for the no-build scenario in Hendricks, Johnson, Marion, and Morgan counties. Allocations of households and employment were confirmed and converted into acres using standard development ratios. The ratios used for all counties were 14.6 employees/acre and 4.38 households/acre. These growth forecasts and associated acreages provided forecasts of the impacts of no-build growth in these four counties.

A second Land Use Panel meeting was held in February 2016 to review the no-build re-allocation and distribute the additional 2045 employment and household allocations induced by the build alternatives.

The total acres of no-build growth for the forecast year were subtracted from the total available land in the present day. For some TAZs, the land is so attractive for future development that the no-build growth (based upon the development ratios) exceeds the amount of available land (using standard development ratios). In these situations, the development would occur on land

[1] *National Land Cover Data (NLCD) is a land-cover data set for the United States. It is produced by the Multi-Resolution Land Characteristics Consortium (MRLC), made up of federal government agencies. The agencies which participated in the formulation of the 2011 National Land Cover Data include U.S. Environmental Protection Agency; U.S. Department of Commerce (National Oceanic and Atmospheric Administration); National Aeronautic and Space Administration; U.S. Department of the Interior (Bureau of Land Management, National Park Service, Fish and Wildlife Service, and U.S. Geological Survey); U.S. Department of Agriculture (Forest Service and National Agricultural Statistics Service); and U.S. Army Corps of Engineers. It is the best available source for comprehensive land cover data for the United States. For additional information about the MRLC or NLCD, see http://www.mrlc.gov/*

that is already developed, resulting in greater densities. The no-build growth in that TAZ could be in the form of a high-rise apartment building or another higher density business/residential use that would exceed the 4.38 households/acre or 14.6 employees/acre values. Existing buildings would be replaced by larger or taller buildings in this situation.

Growth involving an increase in density without a change in land use is common in urban areas like Martinsville and Indianapolis. In TAZs where growth is occurring on land already developed, the acreage of new development is added to existing acreage to reflect the increase in density. This situation can occur for both no-build growth and induced growth. **Table 1** shows the "equivalent acreages" on developed land for Alternatives C1, C2, C3, C4, and the Refined Preferred Alternative (RPA).

The Land Use Panel's methodology allocated growth based upon the location of interchanges, where induced growth differed among alternatives based upon differences in interchange locations. In Hendricks, Johnson, and Marion Counties, the interchange locations are the same among all alternatives. Induced growth is therefore also the same among all alternatives in these counties.

In Morgan County, an interchange is provided at Ohio Street in Alternatives C1, C3, C4, and the RPA, but is not provided in Alternative C2. Alternative C2 therefore has a different pattern of induced growth than the other alternatives in this county.

The RPA was not specifically reviewed by the Land Use Panel. Because it has an Ohio Street Interchange and all other interchange locations are the same, its pattern of induced growth is the same as that for Alternatives C1, C3, and C4.

The values in **Table 1** are used in the cumulative impacts analysis (**Section 5.24**). Since these values reflect added households and jobs that will be accommodated on land that is classified as "developed," the calculations in **Section 5.24** for the total acreage impacts of no-build growth and induced growth do not include the acreages in **Table 1**.

Table 5.24-3 shows the acreage equivalent of the induced growth which occurs on already developed land. The acreages designated as "Induced Growth" in **Table 1** are also provided in **Table 5.24-3** in the columns titled "Developed."

Table 5.24-6 shows the acreage equivalent of no-build growth occurring on already developed land. The acreages designated as "No-Build Growth" in **Table 1** are also provided in **Table 5.24-6** as "Equivalent Development Acres in TAZs without Open Land."

Table 1: Growth on Already Developed Land for TAZs in Hendricks, Johnson, Marion and Morgan Counties

County	Growth on Already Developed Land	I-69 Section 6 Alternatives	
		Alternatives C1, C3, C4, and RPA (acres)	Alternative C2 (acres)
Hendricks			
	No-Build Growth	1,077	1,077
	Induced Growth	0	0
	Total Growth	**1,077**	**1,077**
Johnson			
	No-Build Growth	1,565	1,565
	Induced Growth	11	11
	Total Growth	**1,576**	**1,576**
Marion			
	No-Build Growth	14,992	14,992
	Induced Growth	40	40
	Total Growth	**15,032**	**15,032**
Morgan			
	No-Build Growth	137	137
	Induced Growth	14	32
	Total Growth	**151**	**169**
All Counties	**Total Growth**	**17,836**	**17,854**