Appendix C: Technical methods

This appendix details the analytical methods employed by The Innovation Group (TIG) in its report. TIG's analysis consisted primarily of the use of gravity model in a gaming market analysis; a return-on-investment analysis to assess different levels of capital investment viable in potential casino locations under alternative tax scenarios; and an economic impact analysis using IMPLAN. The following sections are directly from TIG's

Gaming market analysis methodology

A gravity model was used to develop this analysis. Gravity models are commonly used in location studies for commercial developments, public facilities, and residential developments. First formulated in 1929 and later refined in the 1940s, the gravity model is an analytical tool that defines the behavior of a population based on travel distance and the availability of goods or services at various locations. The general form of the equation is that attraction is directly related to a measure of availability such as square feet and inversely related to the square of the travel distance. Thus the gravity model quantifies the effect of distance on the behavior of a potential patron and considers the impact of competing venues.

The basic formulation is that the interaction between two or more gaming venues is based on Newton's Law of Universal Gravitation: two bodies in the universe attract each other in proportion to the product of their "masses"—here, gaming positions—and inversely as the square distance between them. Thus, expected interaction between gaming venue *i* and market area *j* is shown as:

$$k \times \frac{N_i \times P_j}{d_{ij}^2}$$

where N_i = the number of gaming positions in gaming venue i, P_j = the population (21+) in market area j, d_{ij} = the distance between market area j and gaming venue i, and k = an attraction factor relating to the quality and amenities to be found at each gaming venue in comparison with the competing set of venues. When this formulation is applied to each gaming venue gaming trips generated from any given zip code are then distributed among all the competing venues.

The gravity model included the identification of 36 discrete market areas based on drive times and other geographic features and the competitive environment. Using TIG's GIS software and CLARITAS database[1], the adult population (21 and over), latitude and longitude, and average household income is collected for each zip code.

[1]The GIS software used was MapInfo. This software allows for custom data generally in a tabular format with a geographic identification code (census tract, zip code, latitude and longitude, or similar identifier) to be mapped or displayed and integrated with other geographic census based information such as location of specific population or

Each of these market areas is assigned a unique set of propensity and frequency factors. Gamer visits are then generated from zip codes within each of the areas based on these factors. The gamer visits thus generated are then distributed among the competitors based upon the size of each facility, its attractiveness and the relative distance from the zip code in question. The gravity model then calculates the probabilistic distribution of gamer visits from each market area to each of the gaming locations in the market.

Each travel distance/time is evaluated to determine the likely alternative gaming choices for residents of the region. The model is constructed to include only those alternative venues that are considered to be within a reasonable travel time. These include competing casinos that have the potential to attract patrons, or siphon off visits from the market. Travel distances and time have been developed through use of our GIS system.

The following section provides a description and definition of the various components of the model.

Gamer visits

This measure is used to specify the number of patron trips to a gaming market, where an individual can make any number of separate visits in the course of a year. To estimate the gamer visits, market penetration rates, made up of the separate measures of propensity and frequency, are applied to the adult population in each zip code. A gamer visit can include more than one visit to a casino.

Net gaming revenue (or net win)

Net gaming revenue (NGR) or net win in this report refers to amount wagered (for example, coin-in to a machine) minus prizes awarded (or gross gaming revenue) minus the value of redeemed free play credits. The main existing casino jurisdictions in the Virginia region (Maryland, Pennsylvania, and West Virginia) allow free play credits to be subtracted before gaming taxes are applied, and therefore public reporting of gaming revenue shows NGR, which has been utilized in the model calibration. In other markets, such as Illinois and Iowa, free play is taxed and the public reporting shows gross gaming revenue.

Propensity

Propensity measures the percentage of adults who will participate in casino gaming within the zip code. This varies based upon a number of factors, which includes the number of gaming venues, their type (i.e. land based versus cruising riverboat versus dockside riverboat), games permitted, availability of other entertainment and leisure options, and most importantly—distance from a gaming venue. After proximity, age and income are the most influential factors in propensity, with 35 and older having higher propensity. Surveys conducted by the American Gaming Association have shown that gamers

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roadways. MapInfo is one of the most widely used programs in the geographic information systems industry. Nielsen Claritas is a vendor of demographic information located in the United States. Nielsen Claritas provides census demographic and psychographic data on a variety of geographic levels of detail ranging from census block groups and counties to postal zip codes. Their information is updated every six months and includes a current year estimate and provides a five year forecast for the future. The Innovation Group has utilized this data for inputs to its models for the last six years and has purchased full access to their demographic database for the entire United States.

have higher-than-average income. Propensity is fairly consistent among racial and ethnic groups, although people of Asian origin tend to prefer table gaming. Propensity in the inner market areas from 0-50 miles can vary between the low 30 percent range in a single casino market to the upper-40 percent range, or more in a market like Las Vegas, for multiple casinos with a well-developed array of amenities.

Demographic variability is adjusted at the zip code level with the Market Potential Index (MPI) score that is discussed below. The propensity rates shown in this report reflect drive-time proximity and other supply issues (such as games permitted—for example, in Scenario 1, gaming is limited to HHR machines—and capacity constraints).

Frequency

This measures the average number of visits that an adult will make annually to casinos in the subject market. Frequency is a function of annual gaming budget as indicated by income variations, the number of venues in the market, the type of gaming facility, and most importantly distance from a gaming venue.

MPI (market potential index)

Propensity also varies as a function of each market's average market potential index (MPI) score. MPI scores are generated by Simmons Survey, a respected consumer research firm that conducts a nationwide survey of consumer behavior, including propensity to gamble at a casino. This score is an indication of the degree of likelihood that a person will participate in gaming based upon their lifestyle type. The MPI score inflates or discounts the participation rate of each zip code. For example, if a market area has an overall participation rate of 4.0 (propensity of 40 percent times frequency of 10), an MPI score of 120 for a particular zip code would effectively inflate the participation rate of that zip code to 4.8 (4.0 times 120 percent). The overall MPI score for the market area is a weighted average of all the zip codes within the area.

Win per visit

Win per visit varies not only by gaming jurisdiction, but also in some cases by individual facilities. Normatively, win per visit is a function of distance and income. Gamers traveling greater distances tend to spend more per visit, typically making fewer gamer visits on average.

Attraction factors

Attraction factors measure the relative attraction of one gaming venue in relation to others in the market. Attraction factors are applied to the size of the gaming venue as measured by the number of positions it has in the market. Positions are defined as the number of gaming machines plus the number of seats at gaming tables. A normative attraction factor would be one. When this is applied to the number of positions in a gaming venue there is no change in the size of the gaming venue as calculated by the model and hence its attraction to potential patrons. A value of less than one adjusts the size of the gaming venue downwards and conversely a value greater than one indicates that the gaming venue has characteristics that make it more attractive. Attraction factors can be based on a

number of components including branding, the level and effectiveness of marketing efforts, and the level of quality and amenities of a facility. Attraction factors are also adjusted to model the presence of natural and man-made boundaries which impact ease of access and convenience of travel in the market area.

The model's sensitivity to changes in these factors is not in the nature of a direct multiplication. For example, a doubling of the attraction factor will not lead to a doubling of the gamer visits attracted to the site. It will however cause a doubling of the attractive power of the gaming venue, which is then translated via non-linear equations into an increase in the number of gamer visits attracted to the gaming venue. This is based upon the location, size, and number of competing gaming venues and their relationship to the market area to which the equation is applied. The variation of these factors is based upon The Innovation Group's experience in developing and applying these models, and consideration of the existing visitation and revenues. The latter represents the calibration of the model and has been accomplished by adjusting attraction factors to force the model to recreate the existing revenues and patron counts. In this case attraction factors have been adjusted for each casino for each market area. This is based upon known visitation patterns.

Out-of-market visitation and revenue

In addition to the local market revenue generated through the gravity model, casinos generate visitation and revenue from gamers from outside of a defined local market area. This out-of-market gaming demand represents visits driven by reasons other than proximity of permanent residence, such as traffic intercept, tourism, visiting friends and family, seasonal residence, and variety of gaming experience. This typically ranges between 4 percent and 10 percent of a casino's revenue depending upon location and the strength of the tourism market relative to the size of the local population.

Market carve-out

Virginia's expanded gaming market has been carved into 36 distinct market areas, from which different participation rates may be expected depending on the level and location of competition that is present in the market currently and in the future. The following table and map show the market areas and their respective adult population (21 and over) and average household income (Table C-1 and Figure C-1).

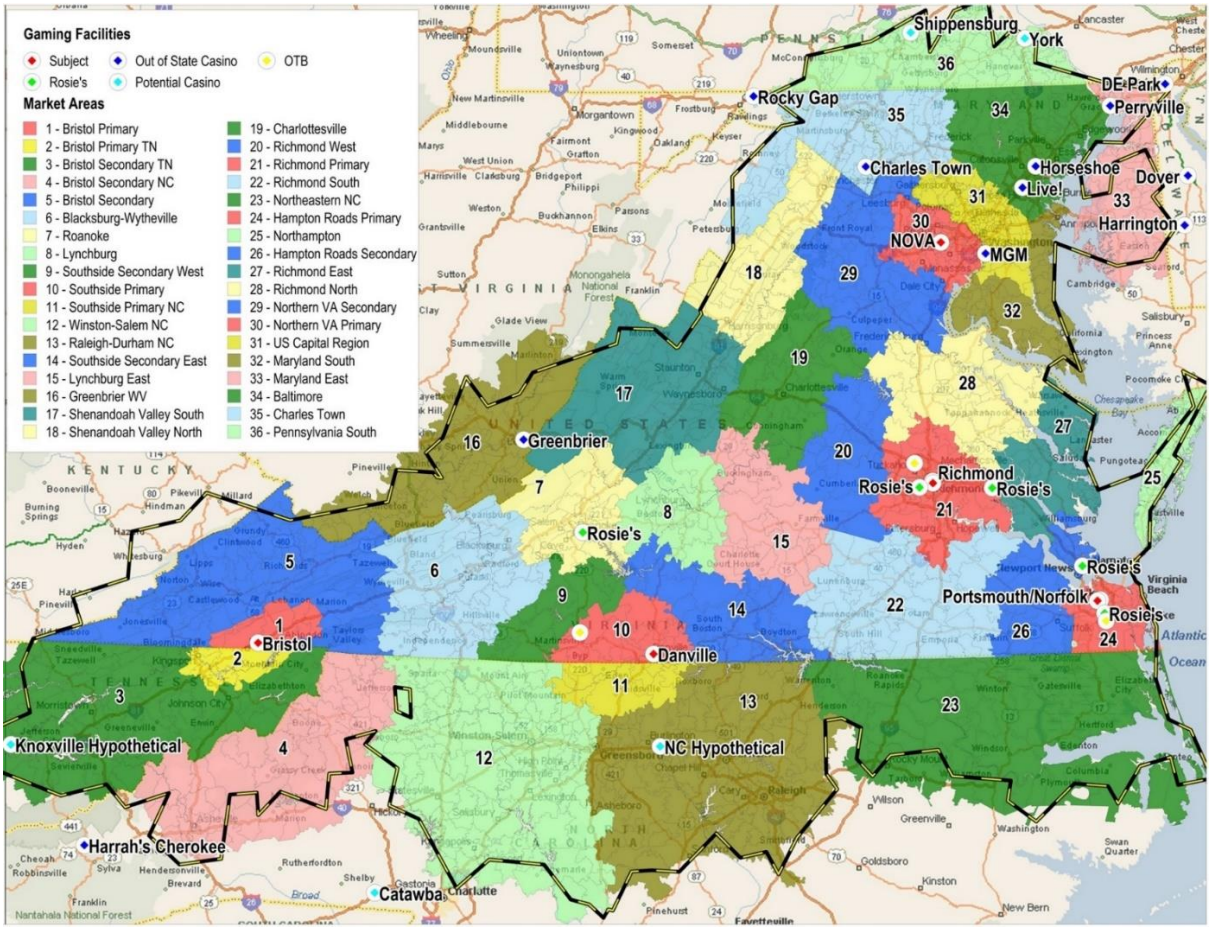
TABLE C-1

Market-area demographics

	Adult Pop 2019	Adult Pop 2024	CAGR 2019-2024	Average HHI[a] 2019	Average HHI 2024	CAGR 2019-2024
1 - Bristol primary	52,943	53,611	0.3%	$64,504	$68,149	1.1%
2 - Bristol primary (TN)	142,000	146,514	0.6	65,258	69,601	1.3
3 - Bristol secondary (TN)	791,008	824,980	0.8	62,764	68,991	1.9
4 - Bristol secondary (NC)	463,354	486,949	1.0	66,640	74,585	2.3
5 - Bristol secondary	180,257	178,157	-0.2	52,667	54,355	0.6
6 - Blacksburg-Wytheville	192,992	198,819	0.6	69,519	76,706	2.0
7 - Roanoke	230,541	237,283	0.6	72,297	76,172	1.0
8 - Lynchburg	160,702	166,833	0.8	69,723	74,071	1.2
9 – Southside - secondary west	54,423	55,198	0.3	60,760	66,295	1.8
10 - Southside - primary	107,053	107,041	0.0	58,017	63,832	1.9
11 - Southside - primary (NC)	78,601	79,843	0.3	52,803	56,056	1.2
12 - Winston-Salem, NC	1,540,174	1,637,102	1.2	78,470	87,405	2.2
13 - Raleigh-Durham, NC	1,809,372	1,956,990	1.6	91,363	101,842	2.2
14 - Southside - secondary east	59,357	59,668	0.1	58,147	63,276	1.7
15 - Lynchburg - east	55,950	56,628	0.2	59,885	65,182	1.7
16 – Greenbrier, WV	113,872	111,445	-0.4	54,027	56,459	0.9
17 - Shenandoah Valley - south	162,267	166,549	0.5	69,169	73,465	1.2
18 - Shenandoah Valley - north	218,205	229,498	1.0	80,020	88,415	2.0
19 - Charlottesville	188,794	198,607	1.0	96,483	103,407	1.4
20 - Richmond - west	76,337	79,497	0.8	85,812	90,472	1.1
21 - Richmond primary	848,949	895,703	1.1	94,220	102,814	1.8
22 - Richmond - south	90,809	90,995	0.0	62,007	66,776	1.5
23 - Northeastern NC	333,788	339,082	0.3	60,976	65,948	1.6
24 - Hampton Roads primary	903,688	928,602	0.5	87,027	96,263	2.0
25 - Northampton	33,319	33,308	0.0	60,690	64,213	1.1
26 - Hampton Roads secondary	253,747	260,649	0.5	86,747	94,025	1.6
27 - Richmond - east	146,087	152,715	0.9	98,096	106,839	1.7
28 - Richmond – north	199,370	210,268	1.1	99,076	108,296	1.8
29 - Northern VA - secondary	442,337	477,582	1.5	133,824	142,956	1.3
30 - Northern VA primary	1,645,233	1,742,226	1.2	160,724	170,004	1.1
31 - US Capital Region	2,012,324	2,111,071	1.0	131,277	141,998	1.6
32 – Maryland - south	401,821	422,578	1.0	129,023	139,144	1.5
33 - Maryland - east	183,443	188,757	0.6	97,204	105,769	1.7
34 - Baltimore	1,925,148	1,981,209	0.6	111,346	124,929	2.3
35 - Charles Town, WV	444,209	465,292	0.9	96,486	105,745	1.8
36 - Pennsylvania - south	549,525	563,423	0.5	82,274	90,651	2.0
Total	**17,091,999**	**17,894,672**	**0.9%**	**$100,214**	**$109,544**	**1.8%**
Virginia total	*6,303,830*	*6,579,859*	*0.9*	*105,163*	*113,367*	*1.5*
National	*241,443,147*	*251,847,827*	*0.8*	*89,646*	*98,974*	*2.0*

SOURCE: iXPRESS, Nielsen Claritas, Inc.; MapInfo: The Innovation Group; CAGR=Compound annual growth rate.
NOTE: [a] Household income.

FIGURE C-1
Virginia Market Area Definitions and 2-Hour* Drive time Ring (*from a VA HHR or potential casino location)



SOURCE: The Innovation Group
NOTE: See online version of report for better differentiation between color coding of regions.

Model calibration

The gravity model was calibrated for 2018–2019 using publicly reported data from state gaming commissions. Competitive casinos were input into the model as discussed in the competitive environment section [of TIG's report]. The following table shows the rates for propensity, frequency, and win per visit by market area that were used to re-create the actual conditions in the Base 2018–2019 model. Win has been varied based on differences between market areas in average household income and travel time. These gaming visits and revenues reflect the total gaming revenue from the defined market area in the last 12 months.

As discussed above in the methodology section, gaming revenue is shown as net gaming revenue (NGR, or net of free play promotional credits) consistent with public reporting in Maryland, Pennsylvania, and West Virginia.

Table C-2 shows the results of the calibration model, which is based on the existing casino competition in the broad region as discussed in the competitive environment chapter above and the NGR generated in the 12-month period of April 2018 through March 2019, which was the latest month available at the time the analysis was being set up. As such, it reflects conditions prior to any gaming in Virginia and excludes the Virginia HHR facilities (Rosie's) that have recently opened. It represents gaming spend by residents of the defined market areas at existing casinos discussed in the Competitive Environment section [of TIG's report]

TABLE C-2
Local Market Gravity Model Calibration Base last 12 months (through March 2019)

	Gamer Pop	Propensity	Frequency	MPI	Visits	WPV	NGR (MMs)
1 - Bristol primary	52,943	10.3%	1.1	79	4,711	88	$0.4
2 - Bristol primary (TN)	142,000	12.8	1.7	83	25,957	88	2.3
3 - Bristol secondary (TN)	791,008	24.3	4.2	84	668,192	82	55.0
4 - Bristol secondary (NC)	463,354	21.6	3.3	83	269,138	86	23.1
5 - Bristol secondary	180,257	9.2	0.9	70	10,072	83	0.8
6 - Blacksburg-Wytheville	192,992	12.8	2.1	82	43,401	90	3.9
7 - Roanoke	230,541	20.6	4.5	91	195,924	87	17.1
8 - Lynchburg	160,702	15.7	2.6	88	57,617	89	5.1
9 - Southside- secondary west	54,423	13.6	1.9	74	10,588	86	0.9
10 - Southside primary	107,053	4.0	0.2	77	539	86	0.0
11 - Southside primary (NC)	78,601	4.7	0.2	75	605	83	0.1
12 - Winston-Salem, NC	1,540,174	11.5	0.9	91	146,336	96	14.0
13 - Raleigh-Durham, NC	1,809,372	6.0	0.2	96	25,557	103	2.6
14 - Southside - secondary east	59,357	5.0	0.3	71	534	86	0.0
15 - Lynchburg - east	55,950	7.6	0.6	74	1,900	86	0.2
16 – Greenbrier, WV	113,872	22.4	5.3	70	96,148	77	7.4
17 - Shenandoah Valley - south	162,267	14.1	2.6	84	50,881	89	4.5
18 - Shenandoah Valley - north	218,205	20.1	4.3	90	168,249	92	15.4
19 - Charlottesville	188,794	12.9	1.7	94	40,087	104	4.2
20 - Richmond - west	76,337	13.0	1.8	87	15,339	99	1.5
21 - Richmond primary	848,949	14.9	2.3	100	293,987	102	30.0
22 - Richmond South	90,809	9.1	0.9	75	5,332	87	0.5
23 - Northeastern NC	333,788	5.3	0.3	78	3,840	87	0.3
24 - Hampton Roads primary	781,377	8.2	0.7	110	48,486	102	4.9
25 – Northampton	33,319	18.7	3.7	69	15,968	83	1.3
26 - Hampton Roads secondary	376,058	8.8	0.8	98	25,818	97	2.5
27 - Richmond - east	146,087	11.3	1.3	91	20,106	105	2.1
28 - Richmond - north	199,370	18.4	3.6	97	126,398	102	12.9
29 - Northern VA - secondary	442,337	21.7	5.0	106	512,298	116	59.2
30 - Northern VA - primary	1,645,233	24.2	7.9	110	3,442,890	121	416.1
31 - US Capital Region	2,012,324	30.0	9.7	110	6,436,889	99	640.0
32 - Maryland - south	401,821	24.7	6.5	106	685,839	109	74.8
33 - Maryland - east	183,443	28.5	8.3	94	410,238	89	36.6
34 - Baltimore	1,925,148	30.4	9.9	112	6,468,294	90	584.7
35 - Charles Town, WV	444,209	26.7	7.6	98	885,799	91	80.7
36 - Pennsylvania - south	549,525	22.5%	5.4	96	642,057	90	58.0
Total	**17,091,999**				**21,856,012**	**99**	**$2,163.3**

SOURCE: The Innovation Group; WPV=Casino Win per Visit; NGR=Net Gaming Revenue; LTM = Last 12 Months

Forecast scenarios

The impact of potential casino development is measured on a future baseline year of 2025, which is estimated to be the first stabilized year of casino operation and the second full year of operation, given the following assumptions for development timeline:

- November 2020: Casino ballot initiatives

- 2021: Casino licensing process
- 2022-2023: Construction of casino facilities
- 2024: Opening of casino facilities

TIG conducted assessments for the following scenarios:

- Scenario 1: HHR Benchmark (five facilities totaling 2,850 machines, as discussed below). HHR has been approved by the Commonwealth (and implemented at three locations already), and HHR is therefore an assumed competitor in all scenarios.
- Scenario 2: Baseline Casino Development (five casinos as mentioned in the current legislation: Bristol, Danville, Norfolk, Portsmouth and Richmond) competing with the HHR facilities.
- Scenario 2a: North Carolina and Tennessee Sensitivity Analysis (testing the impact of hypothetical new casino development in these two states on Bristol and Danville).
- Scenario 3: Northern Virginia (NOVA) alternative. This scenario adds a casino in NOVA to the Scenario 2 assumptions.

TIG used realistically conservative assumptions throughout the modeling process. For the gravity modeling we assumed a mid-range gaming tax of 27 percent, and to simplify the analysis we have assumed a blended rate. Many states—including in the mid-Atlantic region—have higher tax rates for slot machines than for tables, in recognition of the higher labor expense needed for the operation of table games. However, the 27 percent blended rate is competitive with the actual blended rate in other mid-Atlantic states.

Return-on-Investment (ROI) analysis

A high-level ROI analysis was conducted for the five-plus-one casino locations to identify the different levels of capital investment that would be viable under the alternative tax scenarios. Given the small marginal impact by NOVA on the five base casino locations, the ROI analysis utilized the Scenario 2 forecasts for Bristol, Danville, Norfolk, Portsmouth and Richmond and the Scenario 3 results for NOVA.

Methodology

The first step in the ROI process was to complete operating pro formas for each location under the alternative tax scenarios. The operating pro formas were developed using TIG's proprietary operating model and is based on operating characteristics of comparable properties in the region. It also takes into consideration existing and assumed future market dynamics and the major assumptions addressed in previous sections of this report. It is a dynamic model built on a foundation of staffing and expense estimates relative to facility size and business volume, whereby changes to the facility or business volume flow through the model to estimate how variable expenses will be affected. The outputs of the operating model include employment and employee compensation (wages, salaries, tips, taxes and benefits), gaming taxes, other casino expenses, and earnings before interest, taxes, depreciation, and amortization (EBITDA).

The ROI analysis used a discounted cash flow analysis (DCF), which uses unlevered cash flow (a company's cash flow before interest payments). A DCF analysis adjusts for the time value of money in estimating the value of an investment. NPV (net present value) is a comparison of a dollar today to a projected value for the same dollar at some point in the future or the past.

To adjust for the time value of money, a DCF analysis uses a weighted average cost of capital (WACC) or discount rate. Companies and projects are financed by a combination of debt and equity. There is a cost of using this capital, so investors and companies try to earn returns in excess of this cost. This cost—the WACC—corresponds to the weighted average cost, expressed as a percentage, of the various means of financing (loans, equity, etc.) available to fund an investment project. A higher WACC or discount rate results in a lower NPV.

The first step in identifying cash flow is to arrive at a figure for EBIT (earnings before interest and taxes). TIG began with the incremental EBITDA for the five forecasted years and applied a growth rate of 1.5 percent through year 10. EBIT was calculated subtracting the following from EBITDA:

- depreciation[2] as calculated from building cost, FF&E, and maintenance cap ex;
- amortization[3].

Next, EBIT is adjusted to derive unlevered cash flow, which is calculated as follows:

EBIT:
Less: unlevered taxes (at 27 percent)[4]
Plus: depreciation
Less: maintenance capex
= unlevered cash flow

Construction costs, including fixtures, furnishings, and equipment (FF&E) were estimated on a square-foot and per-unit basis. Building costs were depreciated over 20 years; FF&E costs were depreciated over seven years. Other development costs were included in the ROI analysis, including architectural and engineering, permits and site work, land costs, regulatory application fee, working capital, and pre-opening costs.

The analysis also includes an allowance for maintenance capital expenditures. This reflects the need, which grows greater as a property ages and experiences wear and tear, to replace FF&E and in general maintain the facility. Maintenance capex is typically calculated as a percentage of total revenues; in the present analysis a capex allowance of 0.5 percent is applied to incremental revenue in year two, gradually rising to 3.5 percent by year six.

[2] Depreciation is the deduction over a specific period of time (usually over the asset's life) of the consumption of the value of tangible assets, including in this case the building cost and furnishings, fixtures and equipment.
[3] Amortization is the deduction over a specific period of time (usually over the asset's life) of the consumption of the value of an intangible asset, such as a patent or a copyright. It was not utilized in this analysis.
[4] Federal plus Virginia state corporate income tax

Unlevered cash flow through year 10 was then applied to the DCF analysis. In addition, standard methodology is to assess a terminal value to reflect the value the property would continue to have beyond the forecast period. TIG used the Gordon Model: value equals to cash flow divided by discount rate (k) minus a long-term or perpetual growth rate (*g*), "V=CF/(k-g)". Terminal CF is calculated as year 10 cash flow times 1+g. The value for *g* (the perpetual growth rate) has been set at 1.5 percent.

The following table shows an illustrative example of the DCF analysis using the NOVA location under the 27 percent tax scenario:

Table C-3
NPV Cash Flow Illustration: NOVA 27% (MM)

Year>	Year One	Year Two	Year Three	Year Four	Year Five	Year Six	Year Seven	Year Eight	Year Nine	Year Ten	Terminal	*Total*
EBITDA	$225.7	$246.6	$255.5	$262.7	$270.2	$275.6	$281.1	$286.7	$292.4	$298.3		
EBIT	181.1	201.6	210.2	217.1	223.7	228.4	233.8	264.8	270.5	276.3		
Less: unlevered taxes	(48.9)	(54.4)	(56.8)	(58.6)	(60.4)	(61.7)	(63.1)	(71.5)	(73.0)	(74.6)		
Plus: Depreciation	44.6	45.0	45.3	45.7	46.4	47.2	47.2	21.9	21.9	22.0		
Less: Maintenance capex	0.0	(3.3)	(6.8)	(10.5)	(18.0)	(25.7)	(26.2)	(26.7)	(27.2)	(27.8)		
Unlevered cash flow	176.8	188.8	191.9	193.6	191.8	188.2	191.8	188.5	192.2	195.9	1,807.6	
NPV factor	88.9%	79.0%	70.2%	62.4%	55.5%	49.3%	43.8%	39.0%	34.6%	30.8%		
NPV of cash flow	**$157.16**	**$149.18**	**$134.80**	**$120.87**	**$106.42**	**$92.85**	**$84.08**	**$73.46**	**$66.57**	**$60.33**	**$556.65**	***$1,602.4***

SOURCE: The Innovation Group; NPV: net present value

Enterprise value (EV) includes the value of debt, which would need to be paid by a willing buyer. Therefore, the development costs need to be subtracted from EV to determine residual equity value (or ***net*** present value), which represents the fair market value in a DCF valuation. In other words, the NPV line represents the present value of cash flows, minus the cost of development or capital outlay. A positive NPV value indicates a project is generally worth pursuing.

Table C-4
ROI Illustration: NOVA 27% (MM)

Discount rate	12.50%
Perpetual growth rate	1.50%
Enterprise value (present value of cash flows)	1,602.4
Less: project debt & equity	(672.5)
Net present value (NPV) of project*	929.9
Cash-on-cash return in year 5	28.5%

SOURCE: The Innovation Group; *Also known as residual equity value

The cash-on-cash return is commonly used as a basis for determining the return rate of a real estate investment or transaction. This calculation determines the cash income on the cash invested. TIG

calculated the cash-on-cash return rate for the project by utilizing the capital outlay as the denominator, and a numerator taken from year five unlevered cash flow.

Cash-on-cash expectations can vary by company, and in the gaming industry they can fluctuate with economic conditions and investment returns available elsewhere. From the mid-1990s but prior to the Great Recession, when there was dramatic growth in the gaming industry, investor expectations ranged from 20 to more than 25 percent. In the immediate aftermath of the recession, expectations tempered, and returns dropped to the 10 to 15 percent range as gaming revenue in established jurisdictions remained relatively flat into 2014. As normative growth has resumed in the industry, return expectations have started to rise again, into the 15 to 20 percent range.

Economic impact analysis

Economic impact analyses are commonly used tools to estimate the economic activity that results from the opening or closure of a business or industry to an area. In this section, TIG assesses the economic impacts resulting from the projected changes in business volume (as measured in revenue) and employment due to legalized gambling in the state.

TIG performed the analysis using IMPLAN data and software, a leading supplier of economic impact data and software used and relied on by thousands of private developers and government agencies.

Methodology

The economic benefits—the revenues, jobs, and earnings—that accrue from the annual operations of an enterprise are termed ***ongoing*** impacts. The construction phase of a project is considered a ***one-time*** benefit to an area. This refers to the fact that these dollars will be introduced into the economy only during construction; construction impacts are expressed in single-year equivalence to be consistent in presentation with ongoing annual impacts.

- The economic impact of an industry consists of three layers of impacts:direct effects,
- indirect effects, and
- induced effects

The **direct effect** is the economic activity that occurs within the industry itself. The direct effect for casino operations represents the expenditures made by the facility in the form of employee compensation and purchases of goods and services (direct expenditures), which ultimately derive from patron spending on the casino floor, and patron spending on non-gaming amenities is an additional direct effect.

Indirect effects are the impact of the direct expenditures on other business sectors: for example, the advertising firm who handles a casino's local media marketing. Indirect effects reflect the economic spin off that is made possible by the direct purchases of a casino. Firms providing goods and services to a casino have incomes partially attributable to the casino.

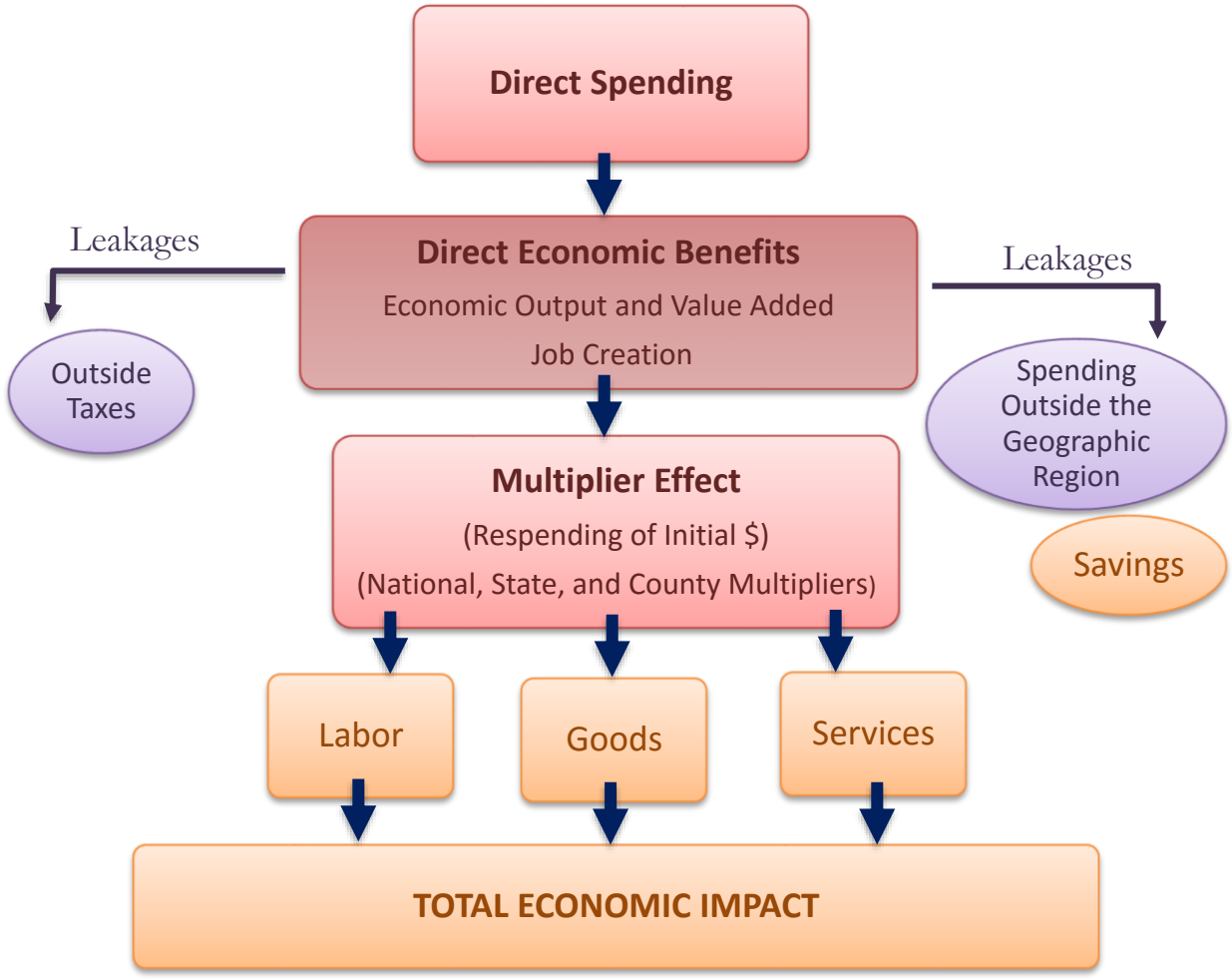
Finally, the **induced effects** result from the spending of labor income: for example, casino employees using their income to purchase consumer goods locally. As household incomes are affected by direct employment and spending, this money is recirculated through the household spending patterns causing further local economic activity.

The **total** economic impact of an industry is the sum of the three components.

Determining the direct economic impact is a critical first step in conducting a valid economic impact analysis. Once the direct expenditures are identified, the indirect and induced effects are calculated using multipliers derived from an input-output model[5] of the economy. The IMPLAN input-output model identifies the relationships between various industries. The model is then used to estimate the effects of expenditures by one industry on other industries so that the total impact can be determined. Industry multipliers are developed based on U.S. Census data. IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis.

The following flow-chart shows how the economic impact model operates.

Figure C-2
Economic impact model

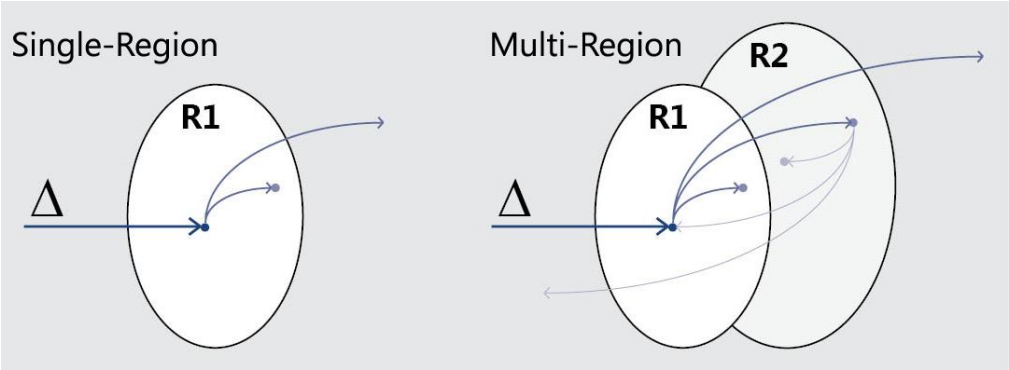


[5] IMPLAN 3.1 software and data were utilized for this study.

SOURCE: The Innovation Group

Given the number of counties and cities that would be affected by the potential changes, TIG relied on the multi-regional input-output (MRIO) analysis method available in the IMPLAN Pro 3.1 software. In this process, TIG entered the direct spending associated with the construction and operation of the facility into a study area model. For this analysis, there are five study area models each comprising the local jurisdiction hosting a gaming facility and surrounding jurisdictions within the region. Then, the regional model is linked to a model of all remaining jurisdictions within the state. This allows our analysis to capture impacts from purchases and employment that would have otherwise occurred outside the study area but within Virginia. IMPLAN models estimate the additional impact using existing trade flow patterns and data on each industry's supply chain, identifying linkages between industries from one region to another.

Figure C-3



SOURCE: The Innovation Group

Our analysis of these linked models yields direct, indirect, and induced effects for the study area, as well as indirect and induced effects for the balance of the state; direct effects occur *only* in the study area as all purchases and employment associated with construction, employment, and operations occur there. The multi-regional analysis thus results in impacts for the study area (host region) and the rest of Virginia (termed "rest of state" in the table headings in this report).

The following map identifies the counties in each of the five regional models used for the analysis.