2018 SHIFT Considerations

KYTC Work Group - Economic Team

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Economic Growth Score Statewide

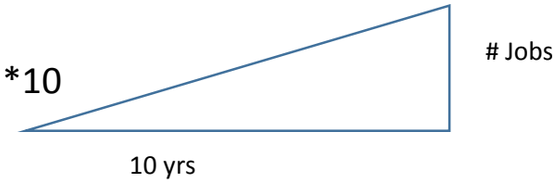
Economic Competitiveness (EC) Formula

Statewide: 10%

Statewide Score = 10% * Economic Competitiveness Measure (ECM):

$$ECM = 0.5 * Yrs\_Emp_{10yr} + 0.5 * (VA_{\Delta CE} - {}^{\dagger} scaled)$$

$$Yrs\_Emp_{10yr} = (\#\_Jobs - {}^{\dagger} scaled) * 1/2 * 10$$



TREDIS®

Measure	Description	Source
Yrs_Emp_{10yr}	Cumulative # of job-years of employment created over a 10 year period (2017 -2026)	TREDIS
$VA_{\Delta CE}$	Value Added, % change in County Economy over 10 yr. period (2017- 2026)	TREDIS
#_Jobs	# Long-Term Jobs created over 10 year period (2017- 2026)	TREDIS

†Scaled - The percentile rank of the value. Converts value to score of 0 to 100.

Economic Growth - Statewide

The following were considered further:

Economic Competitiveness (Statewide Analysis):

TREDIS Input Data:

- Project Cost vs. Not including Project Cost
- Absolute Value of TTS vs. Zero Value of TTS

TREDIS Output Data:

- #Jobs Created vs. %Jobs Created
- % Change in County Economy over a 10 year period (No Scoring Revision)

Adding Project Cost Considered

Economic Competitiveness (Statewide Analysis):

TREDIS Input Data:

- Project Cost vs. Not including Project Cost

Recommendations:

Workgroup decided against adding project costs for the following reasons:

- Considered elsewhere in the SHIFT scoring process.
- May not be available for all projects at the same level of accuracy
- Cost estimate precision varies depending on phase (P,D,R,U & C) of development

Adding Absolute Value TTS Considered

Economic Competitiveness (Statewide Analysis):

TREDIS Input Data:

- Absolute Value of Travel Time Savings (TTS) vs. Zero Value of TTS

Recommendations:

Workgroup decided against absolute valuing TTS for the following reasons:

- Further review determined coding errors resulted in negative TTS for some consultant modeled projects.
- A recalculation of this significantly negative TTS project found similar TTS to the Non-Modeling (calculated) method

Future:

- Further evaluation of a negative TTS project would be warranted before assigning a zero value for a negative TTS

Revising TREDIS Output data Considered

Economic Competitiveness (Statewide Analysis):

TREDIS Output Data:

- Total # Jobs Created vs. %Jobs Created vs. *Hybrid Approach

Methodology:

- Projects entered into TREDIS for economic performance were compared to see how a change in ranking methodology would impact their distribution across the state.
- Currently, economic performance of a project is determined by the total number of jobs created. We wanted to see what would happen if the following were considered:

➢ **A. Projects ranked by the % increase in jobs created by county**

➢ **B. Projects ranked by a *hybrid alternative**

*Higher Rank of total #Jobs Created vs. % increase in Jobs created per county

Economic Growth - Statewide

Economic Competitiveness (Statewide Analysis):

TREDIS Output Data:

- #Jobs Created vs. %Jobs Created vs. *Hybrid Approach

Recommendations:

Workgroup decided to keep Total # Jobs created based on the following:

- Early analysis showed % Jobs per county only is not recommended because analysis showed significant negative impacts on economically thriving counties.
- Further comparison between Total #Jobs Created vs. *Hybrid Approach through sample project scoring resulted in no change in rank for any of the twenty sample projects.

*Higher Rank of total #Jobs Created vs. % increase in Jobs created per county

Economic Growth – Regional

Accessibility / Connectivity Formula

Regional: 10%

Regional Score = 10% * Accessibility/Connectivity Measure (ACM):

$ACM = f(P_{TYP}, TIER_{NEED}, AADT_{CAPPED})$

(Scaled)

Measure	Description	Summary Method	Source
P_{IT}	Project Improvement Type	Eligible Project Improvement Type†	SYP, CHAF
$TIER_{NEED}$	Tiers based on County Economic Indicators	County Tiers based on Negative and Positive Economic Indices†	CED,KSDC and BSSC
$AADT_{CAPPED}$	Annualized Average Daily Traffic	Length Weighted Avg, Max 20,000 (cap higher values)	Jackalope

† See Slide on Economic Growth Accessibility/Connectivity 2016 Criteria.

Economic Growth - Regional

The following were considered further:

Accessibility/Connectivity (Regional Level Analysis):

Input Data:

- Project Improvement Types (to be considered)
- Average Annual Daily Traffic for project (No revision considered)

Output Data:

- Points for Project:
  - County Tiers - Need Indices (to be considered)
  - AADT Equation by grouped County Tier (to be considered)

Add Project Improvement Types Considered

Accessibility/Connectivity (Regional Level Analysis):

Input Data:

- Project Improvement Types (to be considered):

Existing:

Eligible Project Improvement Types:

1. Arterial to Full Control
2. Arterial to Partial
3. Full Control to Interstate
4. Construct Rd in New Location
5. Upgrade to Grade Separation
6. Grade Separated to Interchange
7. Add Lane to Full Control Facility
8. 2 to 4 Lane Divided Rural
9. 2 to 4 Lane Divided Urban
10. Install 2-Way Left Turn Lane
11. Modernize Roadway w/Project Type: Major Widening or Reconstruction

Proposed:

Eligible Project Improvement Types:

1-11. Same as Existing (on left)

12. Recommend Adding: New Routes

Add Project Improvement Types Considered

Accessibility/Connectivity (Regional Level Analysis):

Input Data:

- Project Improvement Types (to be considered):

Recommendations:

Workgroup decided to add "New Routes" to the list for the following reasons:

- Meets the definition for increased accessibility/connectivity to the region

Economic Growth - Regional

Accessibility/Connectivity (Regional Level Analysis):

Output Data:

- Points by Project:

➢ County Tiers - Need Indices Data Sources:

✓ US Census Bureau Data
✓ American Community Survey Data (ACS)
✓ ACS- Small Area Income and Poverty Estimates (SAIPE)
✓ Cabinet for Economic Development (CED)
✓ Bureau of Labor and Statistics (BLS)
✓ BLS- Local Area Unemployment Statistics (LAUS)
✓ Kentucky State Data Center (KSDC)

➢ Average Annual Daily Traffic Equation by grouped Tier

Economic Growth Accessibility/Connectivity 2016 Criteria

2016-2017 Need Indices

Positive Indices:

- High School Education+ Index (2011-2015)
- Population Change Index (2000-2010)
- Median Household Income Index (2011-2015)
- Annual Wage and Salary Per Worker (2015)
- Per Capita Gross Domestic Product by County (2015)
- Labor Force Participation Rate (2011 - 2015)

Negative Indices:

- Annual Average Poverty Rate Index (2015)
- Unemployment Rate Index (2013-2016)

Legend:
*AADT capped at 20,000 vpd

Pts by Project AADT & County Tier

Tiers	Points (Max 100)
Tier 1	*AADT capped/200
Tier 2	*AADT capped/200
Tier 3	*AADT capped/300
Tier 4	*AADT capped/300
Tier 5	*AADT capped/600
Tier 6	*AADT capped/600

Eligible Project Improvement Types:

- Arterial to Full Control
- Arterial to Partial
- Full Control to Interstate
- Construct Rd in New Location
- Upgrade to Grade Separation
- Grade Separated to Interchange
- Add Lane to Full Control Facility
- 2 to 4 Lane Divided Rural
- 2 to 4 Lane Divided Urban
- Install 2-Way Left Turn Lane
- Modernize Roadway w/Project Type: Major Widening or Reconstruction

Economic Growth Accessibility/Connectivity 2016 Source

Kentucky Cabinet For Economic Development: Office of Research and Public Affairs

Bluegrass State Skills Corporation (BSSC) Socioeconomic Index: 2016

Bluegrass State Skills Corporation (BSSC) County Tiers

Tier Range	BSSC Index	Number of Counties
Tier 1	0 to 70	21
Tier 2	70.01 to 80	22
Tier 3	80.01 to 90	28
Tier 4	90.01 to 100	20
Tier 5	100.01 to 110	19
Tier 6	110.01 or Higher	10

Note: Tier 1 = Lowest BSSC Index (Highest Priority) and Tier 6 = Highest BSSC Index (Lowest Priority)

- Kentucky's Average BSSC Index = 100.0
- Higher Than 100.0 = Above the Kentucky Average in Performance
- Lower Than 100.0 = Below the Kentucky Average in Performance

BSSC Tier Prior-ity	Total Index	Location	Adult Population High School Education or Higher: 2010 to 2014		Unemployment Rate Annual Averages 2013, 2014, and 2015		Per Capita Personal Income 2014		Annual Wage and Salary Per Worker 2014		Annual Average Poverty Rate 2014		Per Capita Estimated Gross Domestic Product By County: 2014	
			Percent	Index	Percent	Index	Income	Index	Wage	Index	Percent	Index	Value	Index
	117.16	United States	87.5%	101.0	6.3%	105.8	$ 46,049	123.1	$ 51,552	123.4	15.5%	122.6	$ 54,045	127.0
	100.00	Kentucky	86.6%	100.0	6.7%	100.0	$ 37,396	100.0	$ 41,778	100.0	19.0%	100.0	$ 42,549	100.0
Tier 1	57.6	Owsley	71.1%	82.1	11.2%	59.7	$ 27,274	72.9	$ 26,878	64.3	45.1%	42.1	$ 10,347	24.3
Tier 1	57.8	Elliott	80.5%	92.9	12.0%	55.7	$ 19,879	53.2	$ 27,661	66.2	32.4%	58.6	$ 8,698	20.4
Tier 1	58.5	Wolfe	71.2%	82.2	11.9%	56.0	$ 25,437	68.0	$ 26,402	63.2	36.2%	52.4	$ 12,304	28.9
Tier 1	59.2	Magoffin	74.2%	85.7	15.5%	43.1	$ 24,791	66.3	$ 28,313	67.8	30.2%	62.9	$ 12,508	29.4
Tier 1	59.9	McCreary	74.1%	85.5	10.7%	62.3	$ 22,152	59.2	$ 33,527	80.2	47.0%	40.5	$ 13,362	31.4
Tier 1	61.7	Clay	69.7%	80.5	11.8%	56.7	$ 25,090	67.1	$ 33,969	81.3	38.2%	49.7	$ 14,874	35.0

Economic Growth Accessibility/Connectivity 2018 Criteria

Need Indices Updated 2018

Positive Indices:

- High School Education+ Index (2012-2016)
- Population Change Index (2000-2010)
- Median Household Income Index (2012-2016)
- Annual Average Wage and Salary Per Worker (2016)
- Per Capita Gross Domestic Product by County (2016)
- Labor Force Participation Rate (2012 - 2016)

Negative Indices:

- Annual Average Poverty Rate Index (2012-2016)*
- Average Annual Unemployment Rate Index (2014-2016)

*Went from Single Year to 5 year rolling average ACS-SAIPE data

Economic Growth Accessibility/Connectivity 2018 Source

Kentucky Cabinet For Economic Development: Office of Workforce, Community Development, and Research

Bluegrass State Skills Corporation (BSSC) County Tiers by Aggregation: 2018

Tier Range	BSSC Index	Number of Counties	Total Population 2016	Average County Population 2016	Average Poverty Rate 2016	Average Annual Wage 2016	Total Gross Domestic Product (GDP) Estimated 2016	Gross Domestic Product Per Capita 2016	High School Graduate or Higher (includes equivalency) 2012 -2016	Bachelor's Degree or Higher 2012 - 2016
United States	-	-	-	-	**14.0%**	**$ 53,870**	-	**$57,289**	**88.0%**	**28.4%**
Kentucky	-	**120**	**4,436,974**	**36,975**	**18.2%**	**$ 43,957**	**$196,681,000,000**	**$44,328**	**87.4%**	**21.7%**
Tier 1	0 to 70	25	380,532	15,221	32.9%	$32,674	$6,797,000,000	$18,421	77.9%	10.4%
Tier 2	70.01 to 80	24	462,934	19,289	25.9%	$35,040	$11,093,000,000	$24,714	81.6%	12.0%
Tier 3	80.01 to 90	24	555,857	23,161	19.6%	$34,707	$13,863,000,000	$27,179	85.4%	14.6%
Tier 4	90.01 to 100	23	624,162	27,137	17.8%	$41,622	$25,605,000,000	$42,311	87.2%	17.0%
Tier 5	100.01 to 110	11	539,687	49,062	15.6%	$41,109	$24,006,000,000	$45,879	89.5%	19.7%
Tier 6	110.01 or Higher	13	1,873,802	144,139	13.8%	$48,853	$115,318,000,000	$63,475	90.7%	30.4%

Note: High School Graduate or Higher (includes equivalency) and Bachelor's Degree or Higher pertains to the population 18 to 64 years in age.

Kentucky Cabinet For Economic Development: Office of Workforce, Community Development, and Research

Bluegrass State Skills Corporation (BSSC) Socioeconomic Index: 2018

Note: Tier 1 = Lowest BSSC Index (Highest Priority) and Tier 6 = Highest BSSC Index (Lowest Priority)

- Kentucky's Average BSSC Index = 100.0
- Higher Than 100.0 = Above the Kentucky Average in Performance
- Lower Than 100.0 = Below the Kentucky Average in Performance

BSSC Tier Prior -ity	Total Index	Location	Adult Population High School Education or Higher:	Unemployment Rate Annual Averages (Population 18 to 64) 2015, 2016,	Per Capita Personal Income 2016	Annual Wage and Salary Per Worker 2016	Annual Average Poverty Rate 2016	Per Capita Estimated Gross Domestic Product By County: 2016

Economic Growth Accessibility/Connectivity 2018 Source

Kentucky Cabinet for Economic Development
Office of Workforce, Community Development, and Research

Table 1: Kentucky County Level Labor Force Participation Rate (LFPR)
Period: 2012 to 2016 (ACS Estimates)
Civilian Noninstitutionalized Population 18 Years of Age and Older

Note: **Economic Activity Rate**, EAR (or labor force participation rate, LFPR), is the percentage of the adult population, both employed and unemployed, that constitutes the manpower supply of the labor market (civilian noninstitutionalized population 18 years and over), regardless of their current labor status. This figure (EAR) is a measure of the degree of success of the economy in engaging the adult population in some form of production activity. The noninstitutionalized civilian labor force consists of employed and unemployed persons actively seeking and available for work, but does not include any Armed Forces personnel or persons in institutions such as a mental health facility, skilled-nursing facilities, in-patient hospice facilities or prison.

Area	Civilian Noninstitutionalized Population 18 Years of Age and Older	In Labor Force (Civilian Noninstitutionalized)					Not In Labor Force (Civilian Noninstitutionalized)		
		18 Years of Age and Older		Employed 18 to 64 Years in Age	Employed 65 Years in Age and Older	Unemployed	18 Years in Age and Older	18 to 64 Years in Age	65 Years in Age and Older
		Total Labor Force	Total Employed						
United States	240,100,759	157,812,404	146,523,866	138,920,971	7,602,895	11,288,538	82,288,355	45,376,795	36,911,560
Kentucky	3,315,593	2,039,436	1,891,080	1,797,485	93,595	148,356	1,276,157	742,456	533,701

Kentucky Cabinet for Economic Development
Office of Workforce, Community Development, and Research

Source: Derived from data estimates provided by the United States Census Bureau, American Community Survey (ACS) 5-Year Estimates (2011 to 2015), and civilian noninstitutionalized population 18 years and over.

Note: The In Labor Force data is counted by place of residence, not by county of employment.

Note: The labor force participation rate (LFPR) is the percentage of the population that is either employed or unemployed (that is, either working or actively seeking work) http://www.bls.gov/bls/cps_fact_sheets/lfp_mock.htm.

Note: Noninstitutionalized population is composed of people primarily eligible, able, or likely to participate in the labor force.

Note: Excluded from this table: Institutionalized population - People who are primarily ineligible, unable, or unlikely to participate in the labor force while

Economic Growth Accessibility/Connectivity 2016 Criteria

County Tiers

KYTC County Tier 2016		
Tier Range	**Range**	**Number of Counties 2016**
*Tier 1	0 to 60	22
Tier 2	60.01 to 72	18
Tier 3	72.01 to 84	23
Tier 4	84.01 to 99	28
Tier 5	99.01 to 110	13
Tier 6	110.01 or Higher	16
Total		120

*Tier 1 = Most Economically Distressed Counties

Economic Growth Accessibility/Connectivity 2018 Criteria

KYTC County Tier 2018 & 2016 Comparison

Tier Range	Range	Number of Counties 2016	Number of Counties 2018	Number of Counties by **Equation 2016	Number of Counties by **Equation 2018
*Tier 1	0 to 60	22	22	40	40
Tier 2	60.01 to 72	18	18		
Tier 3	72.01 to 84	23	26	51	52
Tier 4	84.01 to 99	28	26		
Tier 5	99.01 to 110	13	12	29	28
Tier 6	110.01 or Higher	16	16		
Total		120	120	120	120

*Tier 1 = Most Economically Distressed Counties;

**Equations grouped: Tier 1&2, Tier 3&4 and Tier 5&6

Economic Growth Score Regional

Accessibility/Connectivity (Regional Level Analysis):

Output Data:

- Points to Projects:
- County Tiers – Need Indices:

Recommendation:

Workgroup reviewed and decided to keep County Tier-Need Indices for the following reasons:

- Use of Census data and specially identified “need indices/parameters” most widely accepted and to define “human factor”/profile of a “distressed” county
- County Tier system used by Kentucky CED and other states in similar capacity
- Data availability limits options
- Economic need cannot be identified through existing transportation data in needy counties with little to no capacity/congestion issues

Economic Growth Accessibility/Connectivity Criteria

Average Annual Daily Traffic Equation by Tiers

Pts by Project AADT & County Tier	
County Tiers	**Points (Max 100)**
*Tier 1	**AADT capped/200
Tier 2	**AADT capped/200
Tier 3	**AADT capped/300
Tier 4	**AADT capped/300
Tier 5	**AADT capped/600
Tier 6	**AADT capped/600

*Tier 1 = Most Economically Distressed Counties

**AADT Capped at 20,000 vpd

Economic Growth - Regional

Accessibility/Connectivity (Regional Level Analysis):

Output Data:

- Points for Projects:
  - Average Annual Daily Traffic Equation by grouped Tier

Recommendation:

Workgroup reviewed and decided to Keep AADT Equation by grouped Tier for the following reasons:

- Review of the Census data used to define County Indices was determined to not be accurate enough to justify increasing the sensitivity of the equation into single Tiers

Economic Need - Accessibility/Connectivity 2018 Criteria

Counties with Tier and Equation Changes from 2016 to 2018

Location	Overall Index 2016	Overall Index 2018	County Tier 2016	County Tier 2018	Change In Tier?	Change in Equation 2018	Change Eqn-More Distressed 2018	Change Eqn -Less Distressed 2018
Kentucky	100.000	100.000						
Ballard	88.599	79.663	Tier 4	Tier 3	Yes			
Bath	72.425	71.229	Tier 3	Tier 2	Yes	Yes	Yes	
Carlisle	71.825	74.916	Tier 2	Tier 3	Yes	Yes		Yes
Casey	69.676	72.568	Tier 2	Tier 3	Yes	Yes		Yes
Garrard	98.965	99.742	Tier 4	Tier 5	Yes	Yes		Yes
Hickman	66.253	56.431	Tier 2	Tier 1	Yes			
Kenton	108.650	113.955	Tier 5	Tier 6	Yes			
Madison	121.947	109.926	Tier 6	Tier 5	Yes			
Magoffin	63.144	49.457	Tier 2	Tier 1	Yes			
Martin	57.952	63.174	Tier 1	Tier 2	Yes			
McLean	73.551	71.821	Tier 3	Tier 2	Yes	Yes	Yes	
Meade	99.884	97.330	Tier 5	Tier 4	Yes	Yes	Yes	
Monroe	57.848	60.297	Tier 1	Tier 2	Yes			
Owen	87.703	82.381	Tier 4	Tier 3	Yes			
Simpson	99.754	98.267	Tier 5	Tier 4	Yes	Yes	Yes	
Webster	84.730	74.903	Tier 4	Tier 3	Yes			

Additional Questions?

THANK YOU!

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