

5.15 NATURAL RESOURCES AND ENERGY SUPPLY

The operation of an airport requires energy in the form of electricity, natural gas, aviation fuel, diesel fuel, and gasoline. There are two primary sources of energy consumption at an airport – stationary facilities and aircraft operations. Stationary facilities use utility energy (electric energy and natural gas) to provide lighting, cooling, heat, and hot water to buildings, the airfield, and parking areas. Aircraft operations consume fuel energy (Jet fuel (Jet A), low-lead aviation gasoline (AvGas), unleaded gasoline, and diesel fuel) to operate the aircraft and power ground support equipment (GSE) that service the aircraft.

Airport improvements may require additional electric energy and natural gas to cool, heat, or provide lighting to new buildings, runways, or taxiways. Furthermore, the supply of natural resources could be affected by construction activities related to an airport improvement project. A construction project may increase the demand for energy or require the acquisition of land or the removal of dirt, rock, or gravel that could destroy or deplete the supply of natural resources such as oil, coal, minerals, or trees.

5.15.1 REGULATORY SETTING

As directed by Federal Aviation Administration (FAA) Order 1050.1E, Environmental Impacts: Policies and Procedures, "...the proposed action will be examined to identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources." FAA Order 1050.1E further states, "(t)he use of natural resources other than for fuel need be examined only if the action involves a need for unusual materials or those in short supply."¹ Accordingly, this natural resources and energy assessment considered the demand for electricity and natural gas for the terminal buildings and concourses, the demand for fuel due to the operation of aircraft, and the use of natural resources during construction or the reduction in the supply of natural resources due to implementation of the Sponsor's Proposed Project and its alternatives.

The remainder of this section provides an evaluation of the use of energy and consumption of natural resources under the 2006 Existing Conditions and the future 2012 and 2018 No Action Alternative A, and impacts due to construction and implementation of the Sponsor's Proposed Project and its alternatives. The information provided in this evaluation is supported by the procedures and methodology described in Appendix M, *Natural Resources and Energy Supply*.

¹ FAA Order 1050.1E: *Environmental Impacts: Policies and Procedures*, Appendix A, paragraph 13.2a, 2006.

5.15.2 EXISTING CONDITIONS: 2006

Electrical power is provided to the Port Columbus International Airport (CMH or Airport) by Columbus Southern Power (CSP) and natural gas is provided by Columbia Gas of Ohio, Inc.² and by the City of Columbus. Fuel, including Jet A, AvGas, unleaded gasoline, and diesel are provided to the Airport users through airport and airline contracts, and through the fixed-base operator (FBO) contracts with various suppliers, such as Air BP and Englefield Oil.

Stationary Facilities: The primary sources of electrical and natural gas energy consumption at CMH include the terminal building, followed by airfield lighting, and lighting in the parking lots and garage. The terminal complex has a total floor area of approximately 879,500 square feet and is heated by natural gas boilers and cooled by electric chillers. The requirement for electrical energy far surpasses the need for natural gas power.

The airfield consists of two runways and the associated taxiways and apron areas, all requiring edge lighting and centerline lighting on the runways. The runways also are operated with approach lighting systems. High intensity lighting is provided in the parking areas. The total annual use of electric and natural gas energy was provided by the Airport and converted to British Thermal Units (BTU) for ease in comparing the current levels to future levels evaluated under the project alternatives.

Electricity: Electricity is provided to CMH by CSP, which is a subsidiary of American Electric Power Ohio (AEP Ohio). CSP provides electricity to over 743,000 residential, commercial, and industrial customers in central Ohio. AEP Ohio currently serves nearly 1.5 million total customers in Ohio and West Virginia. AEP Ohio currently has over 11,700 mega-watts (MW) of generating capacity available, including over 3,200 MW within the CSP system. Power is delivered throughout the system from 14 power-generating plants (six of which are wholly-or partially- owned by CSP) located throughout Ohio and West Virginia.³ Coal-fired plants account for 74 percent of the electricity generated by these 14 plants. The remaining electricity is generated from natural gas (15 percent); nuclear (8 percent); and wind, hydroelectric, pumped storage, and other sources (3 percent).⁴ Data on electricity usage at CMH was obtained for the period from April 2004 through March 2005. During that period, 116,425 Million BTUs (MBTUs)⁵ of electricity were consumed at CMH. The demand for electrical energy is over three times higher than the demand for natural gas at the Airport. Because no major changes in stationary facilities occurred between April 2004 and 2006 that

² Information retrieved from the Public Utilities Commission of Ohio Web site, accessed on January 8, 2008, <http://www.puco.ohio.gov/>.

³ American Electric Power (AEP), *AEP Ohio Fact Sheets, May 2006*, <https://www.aepohio.com/about/serviceTerritory/>, accessed on October 24, 2006.

⁴ American Electric Power (AEP), *About Us*, <https://www.aepohio.com/about/>, accessed on October 24, 2006.

⁵ MBTU is million BTU (British thermal unit). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

could affect electricity consumption at CMH, this data was presumed to be representative of the Existing (2006) Baseline conditions. **Table 5.15-1** shows electricity usage at CMH for the Existing (2006) Baseline.

Natural Gas: Natural gas is provided to CMH through several sources. CMH participates in the City of Columbus natural gas self help program, which acts as a cooperative to buy and distribute natural gas from several providers. In addition to the terminal, CMH has several out buildings that are provided with natural gas directly from the local provider, Columbia Gas of Ohio, Inc. Columbia Gas is Ohio's largest natural gas provider, serving more than 1.3 million customers.⁶ Data on natural gas usage at CMH was obtained for the period from April 2004 through March 2005. During that time, 38,474 MBTUs of natural gas were consumed at CMH. Because no major changes in stationary facilities occurred between April 2004 and December 2006 that could affect natural gas consumption at CMH, this data was presumed to be representative of the Existing (2006) Baseline conditions. Table 5.15-1 shows natural gas usage at CMH for the Existing (2006) Baseline.

Aircraft Operations: The annual aircraft landing and takeoff cycles (LTO) at CMH represent only a fraction of the aviation fuel demand at the Airport. The total amount of fuel required for annual aircraft operations is a function of the type of aircraft operating at the Airport, the number of engines on each aircraft, the number of annual aircraft operations of each aircraft type, the length of time the aircraft are operating while on the ground and during takeoff and climb out, and the fuel required for the aircraft to reach the flight destination after departure from CMH. The total requirement for aircraft fuel was determined by the Jet A and AvGas fuel throughput to the storage tanks at the Airport. Refer to Chapter Four, *Affected Environment*, Section 4.8, *Air Quality*, for details of fuel throughput for the on-airport fuel storage tanks.

Ground Support Equipment (GSE): The fuel requirement for GSE depends on the type of aircraft operating at the Airport, type of GSE used to service the aircraft, the GSE fuel type, and the length of time required to provide service for each aircraft.⁷ For example, large passenger jets may require several types of GSE including catering trucks, cabin service trucks, belt loaders, cargo loaders, and an aircraft tractor, whereas, smaller air taxi aircraft may only require a ground power unit and a fuel truck. GSE require unleaded gasoline and diesel fuel. The total requirement for unleaded gasoline and diesel fuel was determined by the fuel throughput to the storage tanks at the Airport. In addition, the fuel throughput for the unleaded gasoline and diesel fuel storage tanks includes the requirements to fuel other ground access vehicles at the Airport including staff cars, shuttles, and maintenance equipment. Refer to Chapter Four, *Affected Environment*, Section 4.8, *Air Quality*, for details of fuel throughput for the on-airport fuel storage tanks.

⁶ Information obtained from the Columbia Gas of Ohio, Inc., <http://www.columbiagasohio.com/community/about/>, accessed on October 24, 2006.

⁷ Specialized ground handling equipment (ground support equipment, GSE) is used to provide service to aircraft at the gate. Between arrival and departure, GSE are used to unload, clean, refuel, and load baggage, food, water, and cargo.

Fuel Sources: Aviation fuel (Jet-A and AvGas), unleaded gasoline, and diesel fuel are provided to the Airport from several sources. Generally, unleaded gasoline and diesel fuel are obtained from local providers to be used for rental cars, GSE and other ground access vehicles and equipment. The fuel farm stores Jet-A and AvGas for use by the commercial carriers operating at CMH. The FBOs at CMH provide Jet-A and AvGas for general aviation. The Jet-A fuel used by the scheduled commercial service airlines is stored at the CMH fuel farm. Data on fuel usage at CMH was obtained from the CRAA and the individual users for the most recent period available. The most recent data available is presumed to be representative of the Existing (2006) Baseline conditions. Table 5.15-1 shows fuel usage by fuel type at CMH during the Existing (2006) Baseline. The requirement for Jet A (over 61 million gallons) is much higher than the demand for AvGas. The Jet A requirement includes fueling commercial aircraft for flights, whereas AvGas is used primarily for local non-commercial general aviation flights.

**Table 5.15-1
ANNUAL UTILITY POWER AND FUEL DEMAND –
EXISTING (2006) BASELINE
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	116,425 MBTU	38,474 MBTU	61,248,061 gallons	857,616 gallons	206,822 gallons	1,714,959 gallons
Monthly Average	9,702 MBTU	3,206 MBTU	5,104,005 gallons	71,468 gallons	17,235 gallons	142,913 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
 MBTU is million BTU (British thermal unit). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

Natural Resources: There would be no requirement for construction or use of natural resources of any kind under the existing conditions. Therefore, there would be no affect on local supplies of natural resources.

5.15.3 FUTURE CONDITIONS: 2012

When planning airport improvement projects, FAA policy recommends that facility development include principles of sustainability in design. The FAA encourages the consideration of energy reduction measures in the planning and design of airport improvement projects. These principles are consistent with the governmental

policy⁸ and NEPA regulations that require all agencies to, “utilize a systematic interdisciplinary approach, which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making.”⁹

Construction and implementation of the Sponsor’s Proposed Project and alternatives would not require the use of unusual natural materials or result in the depletion of natural resources in short supply. Therefore, there would be no impact to the use of any natural resources for construction.

**Alternative A:
2012 No-Action**

The following section assesses the energy needs for CMH under the Alternative A conditions in 2012. The methodologies used in the calculations of future projected energy demand at CMH are included in Appendix M, *Natural Resources and Energy Supply*.

Electricity: The 2012 Alternative A would not increase demand for electricity. No new terminal facilities or airfield lighting would be constructed under this alternative. However, the projected usage of electricity for the 2012 Alternative A, shown in **Table 5.15-2**, increases from 116,425 MBTUs (2006 usage) to 145,326 MBTUs due to the increase in passengers projected by 2012 and the reconfiguration of the terminal facilities completed in April 2007 to accommodate other ongoing projects at CMH.

Natural Gas: The 2012 Alternative A would not increase demand for natural gas. No new terminal facilities would be constructed under this alternative; therefore there would be no additional need for heating. The projected usage of natural gas for the 2012 Alternative A, shown in Table 5.15-2, increases from 38,474 MBTUs (2006 usage) to 38,885 MBTUs due to the reconfiguration of the terminal facilities completed in April 2007 to accommodate other ongoing projects at CMH.

Aircraft Operations: Current forecasts project growth in aircraft operations at CMH and additional aircraft movements will likely increase average taxi times. Consequently, there would be an increase in fuel consumption at CMH. The projected fuel consumption at CMH is a function of the direct relationship between fuel demand, aircraft operations, and taxi time. The projected fuel demand at CMH under the 2012 Alternative A is shown in Table 5.15-2.

⁸ Executive Order 13123, *Greening the Government Through Efficient Energy Management*, published at Federal Register Volume 64, Page 30851 (64 FR 30851), dated June 8, 1999, as stated in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures (including Change 1)*, Appendix A, Section 13, *Natural Resources and Energy Supply*, March 20, 2006.

⁹ FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures (including Change 1)*, Appendix A, Section 13, *Natural Resources and Energy Supply*, March 20, 2006.

**Table 5.15-2
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2012
ALTERNATIVE A: NO ACTION
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	145,326 MBTU	38,885 MBTU	75,324,811 gallons	1,054,201 gallons	254,174 gallons	2,107,584 gallons
Monthly Average	12,110 MBTU	3,240 MBTU	6,277,068 gallons	87,850 gallons	21,418 gallons	175,632 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.

MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

The increase in electricity and natural gas consumption is estimated as a result of the reconfiguration of the terminal in April 2007 to accommodate other ongoing projects at CMH. Fuel consumption is projected to increase in proportion to the increase in operations at the Airport.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C2a:
2012 Relocate Runway 10R/28L 800 Feet to the South – Noise Abatement Scenario A**

Alternative C2a includes the relocation of Runway 10R/28L 800 feet to the south of existing Runway 10R/28L. There would also be additional taxiways, which increase the demand for electricity above baseline conditions. This additional electricity demand is estimated to be 1,744 MBTUs to light an estimated 12,200 feet of additional taxiway for a total of 147,070 MBTUs. The replacement runway would not create any additional demand for natural gas. The project is not expected to increase the number of operations at the Airport, however Jet-A and AvGas usage would increase compared to the 2012 Alternative A due to changes in average taxi time under this alternative. The projected energy demand at CMH under the 2012 Alternative C2a is shown in **Table 5.15-3**.

**Table 5.15-3
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2012
ALTERNATIVE C2a
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	147,070 MBTU	38,885 MBTU	75,400,637 gallons	1,054,537 gallons	254,174 gallons	2,107,584 gallons
Monthly Average	12,256 MBTU	3,240 MBTU	6,283,386 gallons	87,878 gallons	21,418 gallons	175,632 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C2b:
2012 Relocate Runway 10R/28L 800 Feet to the South – Noise Abatement
Scenario B**

Alternative C2b includes the same relocation of Runway 10R/28L 800 feet to the south as Alternative C2a, along with implementation of the operational recommendations of the 2007 Part 150 Study.¹⁰ The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the electricity and natural gas demands discussed for the 2012 Alternative C2a. However, Jet-A and AvGas usage would increase due to changes in average taxi time as a result of the operational changes. The projected energy demand at CMH under the 2012 Alternative C2b is shown in **Table 5.15-4**.

¹⁰ The Final Part 150 Study Update for Port Columbus International Airport was submitted to the FAA for approval in November 2007. The FAA accepted the NEMs on December 5, 2007. The FAA issued a Record of Approval on the NCP on May 28, 2008.

**Table 5.15-4
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2012
ALTERNATIVE C2b
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	147,070 MBTU	38,885 MBTU	75,429,728 gallons	1,054,666 gallons	254,174 gallons	2,107,584 gallons
Monthly Average	12,256 MBTU	3,240 MBTU	6,285,811 gallons	87,889 gallons	21,418 gallons	175,632 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CAAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C3a:
2012 Relocate Runway 10R/28L 702 Feet to the South – Noise Abatement Scenario A**

Alternative C3a includes the relocation of Runway 10R/28L 702 feet to the south of existing Runway 10R/28L. There would be additional taxiways, which increase the demand for electricity above baseline conditions. This additional electricity demand is estimated to be 1,695 MBTUs to light an estimated 11,800 feet of additional taxiway for a total of 147,021 MBTUs. While this represents an increase compared to the 2012 Alternative A, the increase is not as high as is projected for Alternative C2a because under alternative C2a the proposed runway would be relocated by 800 feet (98 feet more than Alternative C3a) and additional taxiway lighting would be required. The replacement runway would not create any additional demand for natural gas. The project is not expected to increase the number of operations at the Airport, however Jet-A and AvGas usage would increase compared to the 2012 Alternative A due to changes in average taxi time under this alternative. The projected fuel demand at CMH under the 2012 Alternative C3a is shown in **Table 5.15-5**.

**Table 5.15-5
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2012
ALTERNATIVE C3a
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	147,021 MBTU	38,885 MBTU	75,381,581 gallons	1,054,453 gallons	254,174 gallons	2,107,584 gallons
Monthly Average	12,252 MBTU	3,240 MBTU	6,281,798 gallons	87,871 gallons	21,418 Gallons	175,632 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
 MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C3b:
2012 Relocate Runway 10R/28L 702 Feet to the South – Noise Abatement
Scenario B (Sponsor’s Proposed Project)**

Alternative C3b includes the same relocation of Runway 10R/28L 702 feet to the south as Alternative C3a, along with implementation of the operational recommendations of the 2007 Part 150 Study. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the electricity and natural gas demands discussed for the 2012 Alternative C3a. However, Jet-A and AvGas usage would increase due to changes in average taxi time as a result of the operational changes. The projected fuel demand at CMH under the 2012 Alternative C3b is shown in **Table 5.15-6**.

**Table 5.15-6
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2012
ALTERNATIVE C3b
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	147,021 MBTU	38,885 MBTU	75,409,448 gallons	1,054,576 gallons	254,174 gallons	2,107,584 gallons
Monthly Average	12,252 MBTU	3,240 MBTU	6,284,121 gallons	87,881 gallons	21,181 gallons	175,632 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

5.15.4 ENERGY SUPPLY IMPACT ANALYSIS – 2018 CONDITIONS

This section provides an evaluation of the use of energy and consumption of natural resources under the 2018 No Action Alternative A, and impacts due to construction and implementation of the 2018 Sponsor’s Proposed Project and its alternatives.

Construction and implementation of the Sponsor’s Proposed Project and alternatives would not require the use of unusual natural materials or result in the depletion of natural resources in short supply. Therefore, there would be no impact to the use of any natural resources for construction.

Alternative A: 2018 No-Action

The following section assesses the energy needs for CMH under the Alternative A conditions in 2018. The methodologies used in the calculations of future projected energy demand at CMH are included in Appendix M.

Electricity: The 2018 Alternative A would not increase demand for electricity. No new terminal facilities or airfield lighting would be constructed under this alternative. However, the projected usage of electricity for the 2018 Alternative A increases from 145,326 MBTUs (from the 2012 Alternative A) to 171,916 MBTUs due to the increase in passengers projected by 2018. The projected usage of electricity for the 2018 Alternative A is shown in **Table 5.15-7**.

Natural Gas: The 2018 Alternative A would not increase demand for natural gas. No new terminal facilities would be constructed under this alternative so there would be no additional need for heating. The projected usage of natural gas for the 2018 Alternative A is shown in Table 5.15-7.

Aircraft Operations: Current forecasts project growth in aircraft operations at CMH and additional aircraft movements will likely increase average taxi times. Consequently there would be an increase in fuel consumption at CMH. The projected fuel demand at CMH under the 2018 Alternative A is shown in Table 5.15-7.

**Table 5.15-7
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2018
ALTERNATIVE A: NO ACTION
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	171,916 MBTU	38,885 MBTU	84,682,607 gallons	1,184,557 gallons	285,575 gallons	2,367,979 gallons
Monthly Average	14,326 MBTU	3,240 MBTU	7,056,884 gallons	98,713 gallons	24,035 gallons	197,332 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C2a:
2018 Relocate Runway 10R/28L 800 feet to the South and Construct
Midfield Terminal (T2) – Noise Abatement Scenario A**

Alternative C2a includes the relocation of Runway 10R/28L 800 feet to the south of existing Runway 10R/28L. There would be additional taxiways, which increase the demand for electricity above baseline conditions. This increase is described for the 2012 Alternative C2a conditions. It is anticipated that Phase 1 of the proposed passenger terminal and apron will be in operation by 2018, which will require additional electricity and natural gas for lighting, cooling, and heating. The increased electricity and natural gas requirements are assumed to be a function of the additional square footage of the new terminal and apron area. The total electricity usage is projected to be 274,367 MBTUs and the total natural gas consumption is projected to be 67,284 MBTUs under this alternative. The project is not expected to increase the number of operations at the Airport but Jet-A and AvGas usage would increase compared to the 2018 Alternative A due to changes in average taxi time under this alternative. The projected energy demand at CMH under the 2018 Alternative C2a is shown in **Table 5.15-8**.

**Table 5.15-8
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2018
ALTERNATIVE C2a
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	274,367 MBTU	67,284 MBTU	84,832,729 gallons	1,185,064 gallons	285,575 gallons	2,367,979 gallons
Monthly Average	22,864 MBTU	5,607 MBTU	7,069,394 gallons	98,755 gallons	23,798 gallons	197,332 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
 MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CAAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C2b:
2018 Relocate Runway 10R/28L 800 Feet to the South and Construct
 Midfield Terminal (T2)– Noise Abatement Scenario B**

Alternative C2b includes the same relocation of Runway 10R/28L 800 feet to the south as Alternative C2a, along with implementation of the operational recommendations of the 2007 Part 150 Study. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the electricity and natural gas demands discussed for the 2018 Alternative C2a. However, Jet-A and AvGas usage would change due to changes in average taxi time as a result of the operational changes. The projected fuel demand at CMH under the 2018 Alternative C3b is shown in **Table 5.15-9**.

**Table 5.15-9
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2018
ALTERNATIVE C2b
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	274,367 MBTU	67,284 MBTU	84,849,560 gallons	1,185,121 gallons	285,575 gallons	2,367,979 gallons
Monthly Average	22,864 MBTU	5,607 MBTU	7,070,797 gallons	98,760 gallons	23,798 gallons	197,332 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C3a:
2018 Relocate Runway 10R/28L 702 feet to the South and Construct
Midfield Terminal (T2)– Noise Abatement Scenario A**

Alternative C3a includes the relocation of Runway 10R/28L 702 feet to the south of existing Runway 10R/28L. There would be additional taxiways, which would increase the demand for electricity above baseline conditions under this alternative. It is anticipated that Phase 1 of the proposed passenger terminal and apron will be in operation by 2018, which will require additional electricity and natural gas for lighting, cooling, and heating. The increased electricity and natural gas requirements are assumed to be a function of the additional square footage of the new terminal and apron area. The total electricity usage is projected to be 274,318 MBTUs and the total natural gas consumption is projected to be 67,284 MBTUs under this alternative. While this represents an increase in electricity consumption compared to the 2018 Alternative A, the increase is not as high as is projected for Alternatives C2a and C2b because under alternatives C2a and C2b, the proposed runway would be relocated by 800 feet (98 feet more than Alternative C3a) and additional taxiway length would be required. The project is not expected to increase the number of operations at the Airport, but Jet-A and AvGas usage would increase compared to the 2018 Alternative A due to changes in average taxi time under this alternative. The projected fuel demand at CMH under the 2018 Alternative C3a is shown in **Table 5.15-10**.

**Table 5.15-10
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2018
ALTERNATIVE C3a
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	274,318 MBTU	67,284 MBTU	84,802,071 gallons	1,184,961 gallons	285,575 gallons	2,367,979 gallons
Monthly Average	22,860 MBTU	5,607 MBTU	7,066,839 gallons	98,747 gallons	23,798 gallons	197,332 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

**Alternative C3b:
2018 Relocate Runway 10R/28L 702 Feet to the South and Construct
Midfield Terminal (T2)– Noise Abatement Scenario B (Sponsor’s Proposed
Project)**

Alternative C3b includes the same relocation of Runway 10R/28L 702 feet to the south as Alternative C3a, along with implementation of the operational recommendations of the 2007 Part 150 Study. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the electricity and natural gas demands discussed for the 2018 Alternative C3a. However, Jet-A and AvGas usage would change due to changes in average taxi time as a result of the operational changes. The projected fuel demand at CMH under the 2018 Alternative C3b is shown in **Table 5.15-11**.

**Table 5.15-11
PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND – 2018
ALTERNATIVE C3b
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity	Natural Gas	Jet A Fuel	AvGas	Diesel	Gasoline
Annual	274,318 MBTU	67,284 MBTU	84,819,270 gallons	1,185,019 gallons	285,575 gallons	2,367,979 gallons
Monthly Average	22,860 MBTU	5,607 MBTU	7,068,272 gallons	98,752 gallons	23,798 gallons	197,332 gallons

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

Table 5.15-12 shows a comparison of energy demands for each alternative in 2012 and 2018.

5.15.5 LOCAL COORDINATION

The inventory of existing stationary facilities and aircraft operations at CMH did not identify any unusual energy uses that would indicate that the power companies or fuel suppliers would have difficulty providing adequate capacity to meet the demand of airport facilities, or that any natural resources that would be used during construction were in short supply.

The electricity and natural gas providers were contacted to determine the capability to meet the future projected energy demands under the proposed alternatives. The energy providers stated that there would be no problem in delivering the energy requirements of the proposed alternatives. Copies of coordination letters and the responses are provided in Appendix M.

**Table 5.15-12
SUMMARY OF ACTUAL AND PROJECTED ANNUAL UTILITY POWER AND
FUEL DEMAND
Port Columbus International Airport**

	Energy Type					
	UTILITY energy		FUEL energy			
	Electricity (MBTUs)	Natural Gas (MBTUs)	Jet A Fuel (Gallons)	AvGas (Gallons)	Diesel (Gallons)	Gasoline (Gallons)
2006 Baseline	116,425	38,474	61,248,061	857,616	206,822	1,714,959
2012 No Action	145,326	38,885	75,324,811	1,054,201	254,174	2,107,584
2012 C2a	147,070	38,885	75,400,637	1,054,537	254,174	2,107,584
2012 C2b	147,070	38,885	75,429,728	1,054,666	254,174	2,107,584
2012 C3a	147,021	38,885	75,381,581	1,054,453	254,174	2,107,584
2012 C3b	147,021	38,885	75,409,448	1,054,576	254,174	2,107,584
2018 No Action	171,916	38,885	84,682,607	1,184,557	285,575	2,367,979
2018 C2a	274,367	67,284	84,832,729	1,185,064	285,575	2,367,979
2018 C2b	274,367	67,284	84,849,560	1,185,121	285,575	2,367,979
2018 C3a	274,318	67,284	84,802,071	1,184,961	285,575	2,367,979
2018 C3b	274,318	67,284	84,819,270	1,185,019	285,575	2,367,979

Notes:

- * AvGas is low-lead aviation gasoline for general aviation aircraft.
MBTU is million BTU. One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.