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September 27, 2018

VIA HAND DELIVERY

Mr. Chris Brand, Chairman
Town of Marlborough Planning Board
21 Milton Turnpike
Milton, NY 12547

Re: Marlboro on Hudson
Planning Board Site Plan
Tax Lot 108.12-8-23
Town of Marlborough, Ulster County, NY
MC Project No. 030218F

Dear Chairman Brand:

The following is a list of the questions and concerns that were raised during the public hearing on 9/17/2018. Comments as well as attachments have also been included to address these concerns.

1. Questions were raised about how the additional bedroom will affect the sewer flows, the traffic and the number of school aged children. They have been addressed as followed:
 - a. As outlined in a previously submitted memo dated 8/10/2018, the proposed buildout will have a **decrease in flows of 240 GPD** from what was previously approved. The memo has been included as *Attachment 1*
 - b. To determine the proposed increase in school aged children the Fannie Mae Foundation Residential Demographic Multipliers were used (*Attachment 2*).

The previously approved 36 units with two bedrooms produced the following school aged children

$$36 \text{ units} \times 0.11 = 3.96 \rightarrow 4 \text{ children}$$

The proposed project with 12 units with 2 bedroom (existing) and 36 units with 3 bedrooms (proposed) produced the following school aged children

$$(12 \text{ units} \times 0.11) + (24 \text{ units} \times 0.34) = 9.48 \rightarrow 10 \text{ children}$$

The proposed change in bedroom count will cause an increase of **6 school aged children**.

- c. According to the Institute of Transportation Engineers (ITE) there is **no distinction between the trip generation for a 2-bedroom and 3-bedroom units**. Therefore, there is no impact to traffic from the increase bedroom count. A more detailed traffic memo has been included as *Attachment #3*
2. During the public hearing it was brought to our attention that there is a drainage / flooding issue impacting some of the homes off Anna Place, north of our site. This is the discharge point for the project's northern basin. Maser Consulting and a representative from the Towns Engineer's office (MHE) conducted a joint inspection on 9/25/2018 to investigate the drainage in this area. At the time of the inspection it had been raining heavily for 12 hours. **We observed no discharge from the basin on our site.** The majority of the runoff was flowing down Anna Place and turning north to the natural drainage swale running north along the home owner's property line. The other major contributor to the possible flooding may be the filling of the lot north of the project site (Tax Lot 108.12-8-24). A large amount of erosion was observed during our inspection, this may impact the storage of the natural swale and cause flooding to the property. Photos from the inspection as well as historic photos have been included as *Attachment #4*.
3. It was brought to our attention during the meeting that there are minor conflicts between the plan and legend. Also, a depressed curb is missing in front of units 13 and 14. These corrections will be included in the final set of site plans submitted to the Planning Board.
4. A more detailed phasing plan was requested at the meeting. While the roadway sidewalks, drainage structures and utilities will be installed first, a more detail order of the unit construction is as followed:
 - a. Units 1-8, the northern most building, will be the first. When 6 units are sold then construction will state on units 17-24. When all the units are finished being built and sold totaling 16 units we will then start the pool and clubhouse. Lastly, the units 25-32 will be constructed.
5. Concerns about the existing pump station and alarm were also raised during the meeting. The proposed pump alarm will be a call system. The proposed generator that will service the pump station has been included as *Attachment #5*
6. It was requested that the proposed amenities for the project be further explained. The amenities are to include a pool, a clubhouse, and a picnic area. The clubhouse will consist of 2 bathrooms, no showers, a small meeting room and a small fitness room. The picnic area will consist of a charcoal barbeque and a picnic bench, this to be located in the area of the clubhouse.
7. The applicant is currently working with the Planning Board to determine what fees are currently outstanding. The recreation fees have been paid for the installed units, but not for the proposed units. The Planning Board had no record of the sewer and water fees.



If you have any questions regarding the attached do not hesitate to call me at 845.564.4495, extension 3802.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in blue ink, appearing to read 'Andrew B. Fetherston'.

Andrew B. Fetherston, P.E.
Principal Associate

ABF/cpm

CC: Mike Turturro, w/ enclosures
Pat Hines, w/ enclosures
Anthony Russo, w/ enclosures
Mike Moriello, w/ enclosures

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MC Project No. 030218F
Marlboro on Hudson

ATTACHMENT 1



Engineers
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August 10, 2018

VIA UPS

Mr. Michael Turturro
Highland Avenue Marlboro, LLC
11 Racquet Road
Newburgh, New York

Re: Marlboro on Hudson
Tax Parcel 108.12-8-23
Town of Marlborough, Ulster County, New York
MC Project No. 030218F

Dear Mr. Turturro:

As requested, Maser Consulting P.A. investigated the impacts to sewer and water for the development Marlboro on Hudson with the proposed project buildout having a total of 3 bedrooms for each of the 24 new units, one additional over what was approved for the site.

The originally approved site Sanitary Sewer pump Station Design Report used an average daily flow of **10,800 Gpd** and a peak flow Rate of **44,280 Gpd** using the applicable design standards of 2003. The proposed flows were recalculated in accordance with New York state Design Standards for Intermediate Sized Wastewater Treatment Systems dated March 5, 2014, the calculations have been outlined below.

Average Daily Flow

110 Gpd for post 1994 plumbing code fixtures (Per Table B-3)

110 Gpd/bedroom * 12 units (existing) * 2 bedroom/unit	= 2,640 Gpd
110 Gpd/bedroom * 24 units (new) * 3 bedroom/unit	= 7,920 Gpd
Total	= 10,560 Gpd (240 Gpd < approved)

Peak flow Rate

Peaking factor	= 4.1
10,560 * 4.1	= 43,296 Gpd (984 < approved)

The previously approved sanitary sewer pump station design report, prepared by Maser Consulting, Dated November 13, 2003 has been attached to this letter for reference.

As shown, the proposed additional bedroom will not have an increase impact with regards to sewer and water flows. Additionally, Maser Consulting performed an inspection on the existing pump station on May 25, 2018, where the pump components were tested. It was determined that the

Customer Loyalty *through* Client Satisfaction



Chairperson Chris Brand
MC Project No. 030218F
August 10, 2018
Page 2 of 2

pump station was generally built in accordance with the approved plan and was operating as designed. It is however required that a generator be installed on existing pad next to the pump station per the approved plan, as it does not have the required 24 hour storage.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in blue ink, appearing to read 'Andrew B. Fetherston', is written over the printed name.

Andrew B. Fetherston, P.E.
Principal Associate

ABF/pa
Enclosures

R:\Projects\2003\03-0218F Marlboro on Hudson\Reports\SEW PUMP STA REPORT FINAL FOR UCDH\180820 Updateed Flow Calc.docx



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***Pine View Corners Subdivision
Highland Avenue
Town of Marlborough
Ulster County, New York***

Tax Lot 108.12-8-23

Sanitary Sewer Pump Station Design Report

Dated: August 13, 2003
Revised: November 13, 2003

A handwritten signature in black ink, appearing to read 'Andrew B. Fetherston', written over a horizontal line.

Andrew B. Fetherston, P.E., CPESC
N.Y.S. License No. 073555



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PROJECT: Pine View Corners
Highland Avenue
Town of Marlborough
Ulster County, New York
MC Proposal No. 03-0218A

SCOPE: Sanitary Sewer Pump Station Design Report

DATE: August 13, 2003
REVISED November 13, 2003

INTRODUCTION:

The proposed construction of thirty-six (36), two-bedroom housing units requires a flow determination and sanitary sewer pumping station design. The design presented herein meets the Standards for Wastewater Treatments Works 1988, NYSDEC and the Ten State Standards, 1997.

METHODOLOGY:

1. The average daily flow was determined by multiplying the number of units by the number of gallons per unit per day.
2. The peak flow was determined by multiplying the average daily flow by 4.1⁽¹⁾.
3. The route of the new forcemain has been laid out on a plan view. The length of forcemain, discharge elevation and pump elevation were determined.
4. A two (2") forcemain was assumed for the calculation of total dynamic head (TDH).
5. The Hazen Williams formula was used to calculate the total dynamic head for a series of flow values.
6. This series of flow values vs. TDH (the system curve) was plotted on a pump curve.
7. The operating point was determined for one pump.
8. The system curve was plotted on a modified pump curve representing two pumps operating.
9. The float switch elevations were set to eject the collected sewage.

DISCUSSION:

Per the Standards for Wastewater Treatments Works 1988, NYSDEC, the velocity in the forcemain has been calculated to be 3.17 feet per second (fps), greater than the minimum value of 2 fps. The pipe size, two-inch (2") diameter is sufficient to handle the required flow rate. The head loss does not exceed the pumping pressure capabilities. The system curve was plotted, the use and capacities discussed and faxed to the manufacturer for review. The pump model and impeller selection was determined by the manufacturer, and reviewed by the designing engineer. The system curve plotted on the pump curve shows the operating points for the one and two pumps operating.

The forcemain shall be installed four feet below grade and shall be marked with tracer tape for location. A high point air release and cleanout shall be provided in the receiving manhole.

A generator shall be provided onsite to provide standby emergency power.

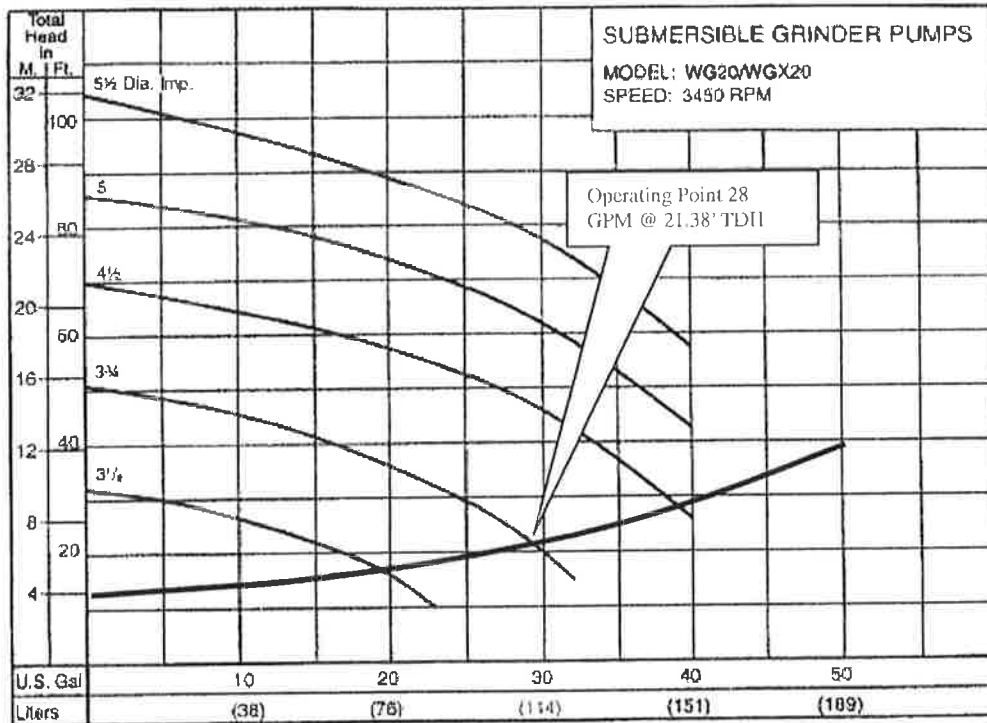
2" Forcemain, Pvc Sched 80				
Velocity In Force Main				
1 Pump Running				
Pipe Inside Diameter	2.00	In		
Pipe Area	0.022	Sq Ft		
Operating Flow Rate	28.0	Gpm		
	0.062	Cfs		
Operating Velocity	2.86	Fps		
2 Pumps Running				
Pipe Diameter	2.00	In		
Pipe Area	0.022	Sq Ft		
Operating Flow Rate	48	Gpm		
	0.107	Cfs		
Operating Velocity	4.90	Fps		
Cycle Time				
Basin Diameter	4	Ft	Average Inflow	10800 Gpd
Basin Area	12.57	Sq Ft	Average Inflow	7.50 Gpm
Depth Of Effluent	1.5	Ft	Quantity Of Effluent	140.99 Gal
Quantity Of Effluent	18.85	Cf	Ave. Time/Cycle	18.8 Min
Quantity Of Effluent	140.99	Gal	Peak Time/Cycle	7.5 Min
Time For 1 Pump To Empty Basin	5.0	Min		
Time For 2 Pumps To Empty Basin	2.9	Min		
Quantity Of Effluent In Force Main				
Force Main Diameter	2.00	In		
Force Main Area	0.022	Sq Ft		
Force Main Length	290	Ft		
Quantity Of Effluent In Force Main	6.33	Cf		
	47.32	Gal	Forcemain Is Cleared Each Cycle	
Float Switch Height From Wet Well Inv.				
Pump Off	0.5	Ft		
1 Pump On	2	Ft		
2 Pumps On	2.5	Ft		
Alarm On	3	Ft		
Flow Estimation				
Gal/Unit/Day	300			
Number Of Units	36			
Flow Rate (Gpd)	10800	Average Daily Flow		
Peaking Factor	4.1			

Flow Rate (Gpd)	44280	Peak Daily Flow			
Peak Daily Flow	30.75	Gpm			
2 Hour Storage Capacity					
2 Hour Volume	900	Gal			
2 Hour Volume	120.32	Cf			
Wet Well Area	12.57	Sf			
Depth Req'd.	9.57	Ft			
Wet Well Top (Rim Elev.)	371.20	Ft			
Wet Well Inv. In	355.89	Ft			
Depth Provided	15.31	Ft			
Maximum Storage Capacity					
Generator Provided					

Computation Of System Dynamic Head Losses, 2" Sch. 80 Forcemain				
Flow: Gpm	28.0	Peak Factor	4.1	
		Num. Pumps On	1	
Design Flow:Cfs	0.062	Flow: Gpd	40320.0	
<u>Item</u>	<u>Value</u>	<u>Head Loss</u>	<u>Computations</u>	
<u>Internal Piping</u>			High Point	371.73
Diameter:Inches	2.00		Pump Elev.	355.89
Length Of Pipe:Ft	6		Static Head	15.84
Hazen C Factor	150		Dynamic Head	5.54
Area Pipe:Sf	0.02			
Hydraulic Radius:Ft	0.04		Total Head	21.38
Design Flow: Gpm	28.00			
Velocity:Fps	2.859			
Head Loss:Ft	0.10	0.10		
<u>Bend 90 Degrees</u>				
K Value	0.75		Results For System Curve	
Velocity Fps	2.86		<u>Gpm</u>	<u>Tdh</u>
Head Loss: Ft	0.10	0.10	0.0	15.84
<u>Check Valve</u>			10.0	16.65
K Value	3		20.0	18.79
Velocity Fps	2.86		30.0	22.14
Head Loss: Ft	0.38	0.38	40.0	26.64
<u>Bend 90 Degrees</u>			50.0	32.25
K Value	0.75			
Velocity Fps	2.86			
Head Loss: Ft	0.10	0.10		
<u>Bend 90 Degrees</u>				
K Value	0.75			
Velocity Fps	2.86			
Head Loss: Ft	0.10	0.10		
<u>Gate Valve</u>				
K Value	0.25			
Velocity Fps	2.86			
Head Loss: Ft	0.03	0.03		
<u>Increaser</u>				
Initial Diameter: In.	2.00			
Increase To Dia.: In.	2.00			
K Value	0.46			
Velocity 1 Fps	2.86			
Velocity 2 Fps	2.86			
Head Loss: Ft	0.00	0.00		
<u>Bend 90 Degrees</u>				
K Value	0.75			
Velocity Fps	2.86			
Head Loss: Ft	0.10	0.10		

Forcemain Pipe			
Diameter: Inches	2.00		
Length Of Pipe: Ft	290		
Hazen C Factor	150		
Design Flow: Gpm	28.0		
Design Flow: Cfs	0.06		
Area Pipe: Sf	0.02		
Hydraulic Radius: Ft	0.04		
Velocity: Fps	2.86		
Head Loss: Ft	4.65	4.65	
Total Head Loss: Ft		5.54	

Pump Performance

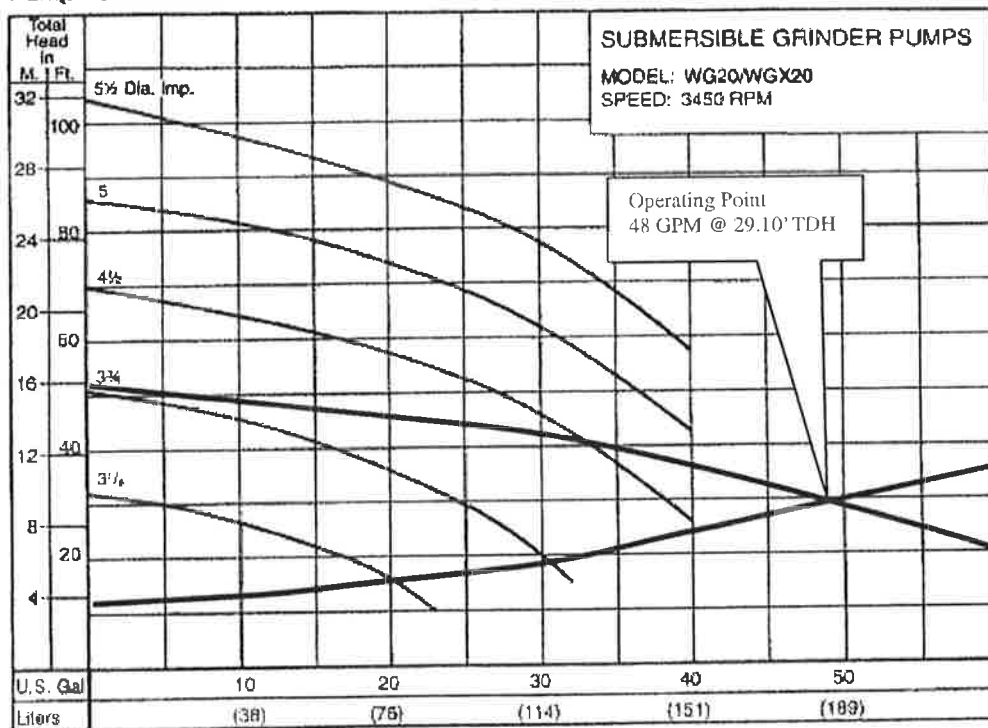


Available Models		Motor Electrical Data										
Standard	Explosion Proof	HP	Volts	Phase	Hertz	Start Amps	Run Amps	Run KW	Start KVA	Run KVA	NEC Code Letter	Service Factor
WG20-01-15	WG20-01-15	2	200	1	60	50.0	15.0	2.8	10.0	3.0	F	1.25
WG20-21-15	WG20-21-15	2	230	1	60	44.0	12.0	2.8	10.1	2.8	F	1.25
WG20-03-15	WG20-03-15	2	200	3	60	30.0	8.5	2.9	10.4	3.3	F	1.25
WG20-23-15	WG20-23-15	2	230	3	60	27.5	8.4	2.9	11.0	3.3	F	1.25
WG20-43-15	WG20-43-15	2	460	3	60	13.8	4.2	2.9	11.0	3.3	F	1.25

Computation Of System Dynamic Head Losses, 2" Sch. 80 Forcemain				
Flow: Gpm	48.0	Peak Factor	4.1	
		Num. Pumps On	2	
Design Flow:Cfs	0.107	Flow: Gpd	69120.0	
Item	Value	Head Loss	Computations	
Internal Piping			High Point	371.73
Diameter:Inches	2.00		Pump Elev.	355.89
Length Of Pipe:Ft	6		Static Head	15.84
Hazen C Factor	150		Dynamic Head	13.26
Area Pipe:Sf	0.02			
Hydraulic Radius:Ft	0.04		Total Head	29.10
Design Flow: Gpm	24.00			
Velocity:Fps	2.451			
Head Loss:Ft	0.07	0.07		
Bend 90 Degrees				
K Value	0.75			
Velocity Fps	2.45			
Head Loss: Ft	0.07	0.07		
Check Valve			Results For System Curve	
K Value	3		Gpm	Tdh
Velocity Fps	2.45		0.0	15.84
Head Loss: Ft	0.28	0.28	10.0	16.56
Bend 90 Degrees			20.0	18.45
K Value	0.75		30.0	21.38
Velocity Fps	2.45		40.0	25.29
Head Loss: Ft	0.07	0.07	50.0	30.15
Bend 90 Degrees			60.0	35.91
K Value	0.75			
Velocity Fps	2.45			
Head Loss: Ft	0.07	0.07		
Gate Valve				
K Value	0.25			
Velocity Fps	2.45			
Head Loss: Ft	0.02	0.02		
Increaser				
Initial Diameter: In.	2.00			
Increase To Dia.: In.	2.00			
K Value	0.46			
Velocity 1 Fps	2.45			
Velocity 2 Fps	2.45			
Head Loss: Ft	0.00	0.00		
Bend 90 Degrees				
K Value	0.75			
Velocity Fps	2.45			

Head Loss: Ft	0.07	0.07		
Forcemain Pipe				
Diameter: Inches	2.00			
Length Of Pipe: Ft	290			
Hazen C Factor	150			
Design Flow: Gpm	48.00			
Design Flow: Cfs	0.11			
Area Pipe: Sf	0.02			
Hydraulic Radius: Ft	0.04			
Velocity: Fps	4.90			
Head Loss: Ft	12.61	12.61		
Total Head Loss: Ft		13.26		

Pump Performance



Available Models		Motor Electrical Data										
Standard	Explosion Proof	HP	Volts	Phase	Hertz	Start Amps	Run Amps	Run KW	Start KVA	Run KVA	NEC Code Letter	Service Factor
WG20-01-15	WG20-01-15	2	200	1	60	60.0	15.0	2.8	10.0	3.0	F	1.25
WG20-21-15	WG20-21-15	2	230	1	60	44.0	12.0	2.8	10.1	2.8	F	1.25
WG20-03-15	WG20-03-15	2	200	3	60	30.0	9.5	2.9	10.4	3.3	F	1.25
WG20-23-15	WG20-23-15	2	230	3	60	27.5	8.4	2.9	11.0	3.3	F	1.25
WG20-43-15	WG20-43-15	2	480	3	60	12.8	4.2	2.9	11.0	3.3	F	1.25

CONCLUSION:

The proposed pump station and forcemain have ample capacity to handle a wide variety of flows including peak hourly. The pump station and appurtenances meet the requirements of the Standards for Wastewater Treatments Works 1988, NYSDEC.

Submitted By:

Andrew B. Fetherston, P.E.

- (1) (10 State Standards) Recommended Standards For Wastewater Facilities (1997 Ed.)
Prepared By The Great Lakes-Upper Mississippi River Board Of State Public Health And
Environmental Managers.



MC Project No. 030218F
Marlboro on Hudson

ATTACHMENT 2

Fannie Mae Foundation
Residential Demographic Multipliers
—
Projections of the Occupants of New Housing

**(Residents, School-Age Children, Public School-Age Children)
by State, Housing Type, Housing Size, and Housing Price**

Prepared for:

**Patrick Simmons, Director
Department of Housing Demography
Fannie Mae Foundation
Washington, D.C.**

Prepared by:

**Robert W. Burchell, Ph.D.
David Listokin, Ph.D.
William Dolphin, M.A.
Center for Urban Policy Research
Edward J. Bloustein School of Planning
and Public Policy
Rutgers, The State University of New Jersey
New Brunswick, New Jersey**

June 2006

DESCRIPTION, DEFINITION, AND ORGANIZATION OF RESIDENTIAL DEMOGRAPHIC MULTIPLIERS

The national, state, and District of Columbia residential demographic multipliers are derived from the 2000 U.S. Census 5-Percent Public Use Microdata Sample (PUMS). The demographic multipliers include the following data fields and organization:

1. **Household Size (HS)**: Total persons per housing unit.
2. **Age distribution of the household members** organized into the following age cohorts: 0–4, 5–13, 14–17, 18–24, 25–44, 45–64, 65–74, 75+.
3. **Total school-age children (SAC)** or number of persons in the household of school age, defined as those 5 to 17 years old. (The SAC is the same as the combined number of household members in the 5–13 and 14–17 age cohorts.)
4. **Total public school-age children (PSAC)**, or the SAC who attend public schools.
5. **The SAC and PSAC by grade group** organized as follows: kindergarten (K)–grade 2, grades 3–6, grades 7–9, grades 10–12, and grade 9 by itself. The above data permit the analyst to tabulate the SAC and PSAC by differing school levels (e.g., K–6, 7–12, and 9–12).

The demographic fields shown above are differentiated by **housing type, housing size, housing price, and housing tenure**—four variables that have been found by Rutgers University to be associated with statistically significant differences in the HS, SAC, and PSAC.

The housing or structure types include the following: **single-family detached**; **single-family attached**, sometimes referred to as townhouses or townhomes; **larger (5-or-more-unit) multifamily buildings**, such as garden apartments or stacked flats; **smaller multifamily structures (2 to 4 units)**, such as a starter two-family home; and **mobile homes**. As the 2000 census, the source for the residential multipliers, does not have information on the stories in a housing structure (this was last available in the 1980 census), multiplier presentations cannot disaggregate multifamily housing into garden, mid-rise, and high-rise categories.

Housing-unit size is measured by the number of bedrooms, and data are presented for housing units ranging from **1 to 5 bedrooms**. There is a match between housing type and bedroom number, and the demographic multiplier tables present the common configurations for each housing type. For instance, demographic data are shown for 1- through 3-bedroom multifamily units and not for 4- to 5-bedroom such homes because the multifamily housing tends to be built with fewer rather than more bedrooms. The opposite is the case for single-family detached homes; in this instance, data are presented for 2- to 5-bedroom units as opposed to 1-bedroom units because detached housing is typically built with more rather than fewer bedrooms.

Housing is additionally classified by tenure: **ownership** or **rental**. According to the census, “A housing unit is owner-occupied if the owner or co-owner lives in the unit even if it is mortgaged or not fully paid for. . . . All occupied housing units that are not owner-occupied, whether they are rented for cash rent or occupied without payment of cash rent, are classified as renter-occupied.”

There is a further differentiation of the demographic profiles by housing value or rent. The census definitions for “value” and “rent” are shown on the Definitions page; with regard to the latter, the current study indicates the “gross rent” (rent with utilities) rather than the “contract rent.”

The 2000 census-indicated values and gross rents are updated to 2005 using a residential price inflation index available from the Federal Housing Finance Board. A separate price index is applied for the nation, for each of the 50 states, and for the District of Columbia.

The demographic profiles by 2005 housing values and gross rents are organized following a four-tiered classification: all **value or rent housing**, and then housing arrayed by **terciles (thirds) of value or rent** (units at the 1st–33rd percentile of value or rent; units at the 33rd through 66th percentile of value or rent; and units at the 67th–100th percentile of value or rent.)

DEFINITIONS OF DATA CONTAINED IN THE U.S. CENSUS OF POPULATION AND HOUSING PUBLIC USE MICRODATA SAMPLE (PUMS) 2000

<i>TERMS</i>	<i>DEFINITION/COMMENT</i>
<i>Bedrooms (BR)</i>	The number of rooms that would be listed as bedrooms if the house [or] apartment...were listed on the market for sale or rent even if these rooms are currently used for other purposes.
<i>Housing Categories (Structure Type)</i>	<p><i>Single-family, detached.</i> This is a 1-unit structure detached from any other house; that is, with open space on all four sides. Such structures are considered detached if they have an adjoining shed or garage.</p> <p><i>Single-family attached.</i> This is a 1-unit structure that has one or more walls extending from ground to roof separating it from adjoining structures. In row houses (sometimes called townhouses), double houses, or houses attached to nonresidential structures, each house is a separate, attached structure if the dividing or common wall goes from ground to roof.</p> <p><i>2-4 units.</i> These are units in structures containing 2, 3, or 4 housing units.</p> <p><i>5+ units.</i> These are units in structures containing 5 or more housing units.</p> <p><i>Mobile home.</i> Both occupied and vacant mobile homes to which no permanent rooms have been added are counted in this category. Mobile homes used only for business purposes or for extra sleeping space, and mobile homes for sale on a dealer's lot, at the factory, or in storage, are not counted in the housing inventory. In 1990, the category was "mobile home or trailer."</p>
<i>Household Size</i>	The total number of persons in a <i>housing unit</i> .
<i>Housing Tenure (Ownership or Rental)</i>	A <i>housing unit</i> is occupied if the owner or co-owner lives in the unit even if it is mortgaged or not fully paid for. All occupied housing units that are not owner-occupied, whether they are rented for cash rent or occupied without payment of cash rent, are classified as renter-occupied.
<i>Housing Unit</i>	A <i>housing unit</i> may be a house, an apartment . . . a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy as separate living quarters).
<i>Housing Value (Rent)</i>	Housing value is the census respondent's estimate of how much the property would sell for if it were for sale. In the current study, the value of a rented unit in a 1- to 4-unit structure is estimated to be 100 times the monthly <i>gross rent</i> . The housing value and rents indicated by the 2000 census were updated to 2005 using a residential price inflation index (available from the Federal Housing Finance Board) for the nation, for each state, and for the District of Columbia. Housing value or rent is categorized into a four-tier classification: all value (or rent) housing, and then housing units arrayed by terciles (thirds) of value (or rent).
<i>Housing Rent (Contract Rent)</i>	Contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included.
<i>Housing Rent (Gross Rent)</i>	Gross rent is the <i>contract rent</i> plus the estimated average monthly cost of utilities (electric, gas, water and sewer) and fuels (oil, coal, kerosene, wood, and the like) if these are paid by the renter (or paid for the renter by someone else). In the current study, the monthly gross rents are indicated in the demographic table.
<i>Insufficient Sample</i>	This notation in a table means that fewer than 600 weighted observations were counted for a housing type/bedroom/value combination or for an entire housing type/bedroom combination.
<i>Public School-Age Children (PSAC)</i>	The <i>school-age children</i> attending public school.
<i>Residential Demographic Multipliers</i>	Multipliers show the population associated with different <i>housing categories</i> as well as housing differentiated by <i>housing value</i> , housing size (<i>bedrooms</i>), and <i>housing tenure</i> .
<i>School-Age Children (SAC)</i>	The household members of elementary and secondary school age, defined here as those 5 through 17 years of age.

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL PERSONS	AGE							
		0-4	5-13	14-17	18-24	25-44	45-64	65-74	75+
Single-Family Detached, 2 BR									
All Values	2.14	0.12	0.16	0.05	0.11	0.75	0.63	0.21	0.10
Less than \$218,000	2.17	0.10	0.17	0.09	0.19	0.72	0.67	0.14	0.08
\$218,000 to \$356,500	2.13	0.14	0.17	0.03	0.06	0.80	0.55	0.25	0.13
More than \$356,500	2.11	0.10	0.13	0.04	0.13	0.68	0.76	0.20	0.07
Single-Family Detached, 3 BR									
All Values	3.10	0.36	0.52	0.13	0.11	1.30	0.55	0.08	0.05
Less than \$257,500	3.29	0.39	0.57	0.21	0.19	1.32	0.48	0.07	0.04
\$257,500 to \$356,500	3.13	0.40	0.53	0.12	0.10	1.37	0.49	0.08	0.05
More than \$356,500	2.90	0.28	0.48	0.10	0.07	1.16	0.69	0.09	0.04
Single-Family Detached, 4 BR									
All Values	3.64	0.44	0.81	0.26	0.12	1.35	0.58	0.05	0.03
Less than \$435,500	3.70	0.50	0.80	0.23	0.18	1.45	0.46	0.04	0.04
\$435,500 to \$554,500	3.61	0.43	0.79	0.26	0.11	1.36	0.59	0.04	0.03
More than \$554,500	3.63	0.42	0.84	0.27	0.07	1.25	0.68	0.07	0.04
Single-Family Detached, 5 BR									
All Values	4.37	0.40	1.27	0.39	0.15	1.31	0.72	0.08	0.05
Less than \$554,500	4.42	0.32	1.26	0.40	0.19	1.54	0.58	0.02	0.11
\$554,500 to \$1,386,500	4.43	0.42	1.31	0.36	0.15	1.34	0.67	0.13	0.05
More than \$1,386,500	4.22	0.42	1.21	0.43	0.13	1.06	0.91	0.04	0.02
Single-Family Attached, 2 BR									
All Values	1.97	0.11	0.19	0.04	0.10	0.60	0.60	0.15	0.18
Less than \$178,500	2.40	0.22	0.45	0.08	0.21	0.90	0.46	0.04	0.04
\$178,500 to \$257,500	1.77	0.07	0.08	0.03	0.07	0.57	0.55	0.17	0.24
More than \$257,500	1.78	0.02	0.05	0.01	0.01	0.31	0.85	0.26	0.27
Single-Family Attached, 3 BR									
All Values	2.74	0.17	0.40	0.22	0.19	0.84	0.68	0.18	0.07
Less than \$218,000	3.57	0.21	0.86	0.47	0.22	1.11	0.54	0.08	0.07
\$218,000 to \$435,500	2.50	0.17	0.27	0.07	0.27	0.94	0.49	0.24	0.04
More than \$435,500						Insufficient Sample			
Single-Family Attached, 4 BR									
All Values						Insufficient Sample			
Less than \$356,500						Insufficient Sample			
\$356,500 to \$435,500						Insufficient Sample			
More than \$435,500						Insufficient Sample			
5+ Units–Own, 1 BR									
All Values	1.28	0.07	0.00	0.00	0.00	0.47	0.25	0.12	0.38
Less than \$119,000						Insufficient Sample			
\$119,000 to \$257,500						Insufficient Sample			
More than \$257,500						Insufficient Sample			
5+ Units–Own, 2 BR									
All Values	1.69	0.05	0.05	0.02	0.12	0.60	0.48	0.14	0.23
Less than \$150,500	1.57	0.02	0.12	0.02	0.07	0.74	0.34	0.16	0.09
\$150,500 to \$218,000	1.81	0.09	0.03	0.03	0.14	0.63	0.56	0.11	0.22
More than \$218,000	1.59	0.02	0.00	0.00	0.14	0.43	0.46	0.16	0.38
5+ Units–Own, 3 BR									
All Values						Insufficient Sample			
Less than \$178,500						Insufficient Sample			
\$178,500 to \$257,500						Insufficient Sample			

**CONNECTICUT (1--2) ALL PERSONS IN UNIT:
TOTAL PERSONS AND PERSONS BY AGE**

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL PERSONS	AGE							
		0-4	5-13	14-17	18-24	25-44	45-64	65-74	75+
5+ Units--Rent, 1 BR									
All Values	1.39	0.04	0.04	0.00	0.18	0.49	0.14	0.13	0.36
Less than \$850	1.30	0.03	0.05	0.00	0.07	0.24	0.19	0.26	0.45
\$850 to \$1,450	1.46	0.07	0.06	0.00	0.29	0.64	0.11	0.11	0.18
More than \$1,450	1.39	0.02	0.01	0.00	0.16	0.60	0.12	0.01	0.47
5+ Units--Rent, 2 BR									
All Values	2.24	0.25	0.21	0.05	0.30	0.99	0.26	0.05	0.13
Less than \$1,300	2.54	0.44	0.41	0.07	0.37	1.00	0.18	0.04	0.04
\$1,300 to \$1,800	2.20	0.19	0.15	0.04	0.34	1.08	0.25	0.08	0.07
More than \$1,800	1.99	0.13	0.08	0.05	0.17	0.88	0.35	0.05	0.28
5+ Units--Rent, 3 BR									
All Values	3.44	0.33	0.97	0.24	0.22	1.37	0.25	0.02	0.04
Less than \$1,000					Insufficient Sample				
\$1,000 to \$2,050					Insufficient Sample				
More than \$2,050					Insufficient Sample				
2-4 Units, 1 BR									
All Values	1.76	0.13	0.09	0.09	0.21	0.59	0.26	0.20	0.21
Less than \$83,500	1.55	0.13	0.13	0.08	0.09	0.33	0.25	0.30	0.23
\$83,500 to \$129,000	1.98	0.12	0.06	0.15	0.36	0.75	0.19	0.19	0.17
More than \$129,000					Insufficient Sample				
2-4 Units, 2 BR									
All Values	2.38	0.26	0.32	0.08	0.26	0.84	0.39	0.16	0.06
Less than \$119,000	2.54	0.44	0.38	0.11	0.40	0.83	0.23	0.09	0.05
\$119,000 to \$166,000	2.50	0.23	0.42	0.11	0.32	0.92	0.44	0.03	0.02
More than \$166,000	2.10	0.13	0.16	0.01	0.07	0.77	0.48	0.35	0.13
2-4 Units, 3 BR									
All Values	3.61	0.45	0.60	0.35	0.63	1.04	0.47	0.04	0.02
Less than \$103,000	3.74	0.47	0.92	0.58	0.41	0.86	0.41	0.04	0.05
\$103,000 to \$168,500	3.76	0.64	0.63	0.20	0.63	1.28	0.38	0.00	0.00
More than \$168,500	3.31	0.22	0.27	0.30	0.85	0.95	0.62	0.09	0.01
Mobile, 2 BR									
All Values					Insufficient Sample				
Less than \$71,500					Insufficient Sample				
\$71,500 to \$103,000					Insufficient Sample				
More than \$103,000					Insufficient Sample				
Mobile, 3 BR									
All Values					Insufficient Sample				
Less than \$51,500					Insufficient Sample				
\$51,500 to \$71,500					Insufficient Sample				
More than \$71,500					Insufficient Sample				
Mobile, 4 BR									
All Values					Insufficient Sample				
Lowest third					Insufficient Sample				
\$435,500 to \$990,500					Insufficient Sample				
Highest third					Insufficient Sample				

**CONNECTICUT (2--1) ALL SCHOOL CHILDREN:
SCHOOL-AGE CHILDREN (SAC)**

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL SAC	GRADE				
		K-2	3-6	7-9	10-12	Gr. 9 Only
Single-Family Detached, 2 BR						
All Values	0.21	0.06	0.07	0.04	0.04	0.01
Less than \$218,000	0.27	0.08	0.06	0.05	0.08	0.01
\$218,000 to \$356,500	0.20	0.06	0.08	0.03	0.02	0.01
More than \$356,500	0.17	0.06	0.05	0.04	0.02	0.03
Single-Family Detached, 3 BR						
All Values	0.66	0.21	0.23	0.13	0.09	0.04
Less than \$257,500	0.78	0.18	0.26	0.20	0.13	0.08
\$257,500 to \$356,500	0.65	0.23	0.23	0.12	0.08	0.04
More than \$356,500	0.58	0.20	0.21	0.09	0.08	0.02
Single-Family Detached, 4 BR						
All Values	1.07	0.30	0.34	0.25	0.18	0.08
Less than \$435,500	1.03	0.29	0.34	0.25	0.16	0.07
\$435,500 to \$554,500	1.06	0.30	0.33	0.25	0.17	0.09
More than \$554,500	1.11	0.31	0.36	0.25	0.20	0.07
Single-Family Detached, 5 BR						
All Values	1.66	0.36	0.62	0.40	0.28	0.11
Less than \$554,500	1.65	0.31	0.49	0.51	0.34	0.06
\$554,500 to \$1,386,500	1.68	0.31	0.74	0.39	0.24	0.13
More than \$1,386,500	1.64	0.51	0.48	0.34	0.30	0.13
Single-Family Attached, 2 BR						
All Values	0.23	0.09	0.09	0.02	0.03	0.01
Less than \$178,500	0.53	0.22	0.20	0.06	0.05	0.03
\$178,500 to \$257,500	0.11	0.05	0.03	0.00	0.03	0.00
More than \$257,500	0.07	0.01	0.04	0.00	0.01	0.00
Single-Family Attached, 3 BR						
All Values	0.62	0.12	0.18	0.21	0.11	0.11
Less than \$218,000	1.34	0.20	0.39	0.51	0.24	0.24
\$218,000 to \$435,500	0.34	0.14	0.10	0.05	0.05	0.02
More than \$435,500		Insufficient Sample				
Single-Family Attached, 4 BR						
All Values		Insufficient Sample				
Less than \$356,500		Insufficient Sample				
\$356,500 to \$435,500		Insufficient Sample				
More than \$435,500		Insufficient Sample				
5+ Units--Own, 1 BR						
All Values	0.00	0.00	0.00	0.00	0.00	0.00
Less than \$119,000		Insufficient Sample				
\$119,000 to \$257,500		Insufficient Sample				
More than \$257,500		Insufficient Sample				
5+ Units--Own, 2 BR						
All Values	0.07	0.02	0.01	0.02	0.01	0.01
Less than \$150,500	0.14	0.03	0.03	0.06	0.02	0.00
\$150,500 to \$218,000	0.07	0.03	0.00	0.02	0.01	0.02
More than \$218,000	0.00	0.00	0.00	0.00	0.00	0.00
5+ Units--Own, 3 BR						
All Values		Insufficient Sample				
Less than \$178,500		Insufficient Sample				
\$178,500 to \$257,500		Insufficient Sample				
More than \$257,500		Insufficient Sample				

**CONNECTICUT (2--2) ALL SCHOOL CHILDREN:
SCHOOL-AGE CHILDREN (SAC)**

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL SAC	<u>GRADE</u>				
		K-2	3-6	7-9	10-12	Gr. 9 Only
5+ Units-Rent, 1 BR						
All Values	0.04	0.04	0.00	0.00	0.00	0.00
Less than \$850	0.05	0.05	0.01	0.00	0.00	0.00
\$850 to \$1,450	0.06	0.05	0.01	0.00	0.00	0.00
More than \$1,450	0.01	0.01	0.00	0.00	0.00	0.00
5+ Units-Rent, 2 BR						
All Values	0.27	0.10	0.07	0.06	0.03	0.02
Less than \$1,300	0.48	0.20	0.10	0.13	0.05	0.02
\$1,300 to \$1,800	0.19	0.06	0.08	0.02	0.03	0.01
More than \$1,800	0.13	0.03	0.03	0.05	0.02	0.04
5+ Units-Rent, 3 BR						
All Values	1.21	0.46	0.39	0.19	0.18	0.06
Less than \$1,000			Insufficient Sample			
\$1,000 to \$2,050			Insufficient Sample			
More than \$2,050			Insufficient Sample			
2-4 Units, 1 BR						
All Values	0.18	0.02	0.06	0.04	0.06	0.03
Less than \$83,500	0.21	0.03	0.07	0.06	0.05	0.03
\$83,500 to \$129,000	0.21	0.03	0.03	0.07	0.07	0.07
More than \$129,000			Insufficient Sample			
2-4 Units, 2 BR						
All Values	0.40	0.13	0.12	0.09	0.06	0.02
Less than \$119,000	0.49	0.19	0.09	0.10	0.11	0.00
\$119,000 to \$166,000	0.54	0.12	0.18	0.16	0.07	0.05
More than \$166,000	0.18	0.08	0.08	0.01	0.00	0.01
2-4 Units, 3 BR						
All Values	0.95	0.17	0.30	0.26	0.22	0.13
Less than \$103,000	1.50	0.34	0.38	0.43	0.35	0.23
\$103,000 to \$168,500	0.83	0.14	0.36	0.17	0.16	0.04
More than \$168,500	0.57	0.03	0.17	0.21	0.15	0.14
Mobile, 2 BR						
All Values			Insufficient Sample			
Less than \$71,500			Insufficient Sample			
\$71,500 to \$103,000			Insufficient Sample			
More than \$103,000			Insufficient Sample			
Mobile, 3 BR						
All Values			Insufficient Sample			
Less than \$51,500			Insufficient Sample			
\$51,500 to \$71,500			Insufficient Sample			
More than \$71,500			Insufficient Sample			
Mobile, 4 BR						
All Values			Insufficient Sample			
Lowest third			Insufficient Sample			
\$435,500 to \$990,500			Insufficient Sample			
Highest third			Insufficient Sample			

**CONNECTICUT (3--1) ALL PUBLIC SCHOOL CHILDREN:
SCHOOL-AGE CHILDREN IN PUBLIC SCHOOL (PSAC)**

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL PSAC	PUBLIC SCHOOL GRADE				
		K-2	3-6	7-9	10-12	Gr. 9 Only
Single-Family Detached, 2 BR						
All Values	0.20	0.06	0.07	0.04	0.03	0.01
Less than \$218,000	0.25	0.08	0.06	0.05	0.06	0.01
\$218,000 to \$356,500	0.19	0.06	0.08	0.03	0.02	0.01
More than \$356,500	0.17	0.06	0.05	0.04	0.02	0.03
Single-Family Detached, 3 BR						
All Values	0.59	0.18	0.21	0.12	0.08	0.04
Less than \$257,500	0.69	0.16	0.23	0.18	0.13	0.07
\$257,500 to \$356,500	0.59	0.20	0.22	0.11	0.07	0.04
More than \$356,500	0.51	0.16	0.19	0.09	0.07	0.02
Single-Family Detached, 4 BR						
All Values	0.94	0.25	0.31	0.23	0.15	0.07
Less than \$435,500	0.94	0.26	0.30	0.23	0.15	0.06
\$435,500 to \$554,500	0.94	0.25	0.31	0.23	0.15	0.09
More than \$554,500	0.95	0.25	0.32	0.23	0.16	0.07
Single-Family Detached, 5 BR						
All Values	1.38	0.27	0.53	0.35	0.22	0.09
Less than \$554,500	1.48	0.22	0.44	0.51	0.30	0.06
\$554,500 to \$1,386,500	1.51	0.28	0.67	0.37	0.20	0.12
More than \$1,386,500	1.04	0.29	0.35	0.20	0.20	0.06
Single-Family Attached, 2 BR						
All Values	0.20	0.08	0.08	0.02	0.02	0.01
Less than \$178,500	0.48	0.19	0.20	0.06	0.03	0.03
\$178,500 to \$257,500	0.10	0.05	0.03	0.00	0.02	0.00
More than \$257,500	0.04	0.01	0.03	0.00	0.00	0.00
Single-Family Attached, 3 BR						
All Values	0.56	0.10	0.18	0.19	0.09	0.09
Less than \$218,000	1.34	0.20	0.39	0.51	0.24	0.24
\$218,000 to \$435,500	0.29	0.09	0.10	0.05	0.05	0.02
More than \$435,500		Insufficient Sample				
Single-Family Attached, 4 BR						
All Values		Insufficient Sample				
Less than \$356,500		Insufficient Sample				
\$356,500 to \$435,500		Insufficient Sample				
More than \$435,500		Insufficient Sample				
5+ Units--Own, 1 BR						
All Values	0.00	0.00	0.00	0.00	0.00	0.00
Less than \$119,000		Insufficient Sample				
\$119,000 to \$257,500		Insufficient Sample				
More than \$257,500		Insufficient Sample				
5+ Units--Own, 2 BR						
All Values	0.05	0.02	0.01	0.01	0.01	0.00
Less than \$150,500	0.14	0.03	0.03	0.06	0.02	0.00
\$150,500 to \$218,000	0.03	0.03	0.00	0.00	0.00	0.00
More than \$218,000	0.00	0.00	0.00	0.00	0.00	0.00
5+ Units--Own, 3 BR						
All Values		Insufficient Sample				
Less than \$178,500		Insufficient Sample				
\$178,500 to \$257,500		Insufficient Sample				
More than \$257,500		Insufficient Sample				

**CONNECTICUT (3--2) ALL PUBLIC SCHOOL CHILDREN:
SCHOOL-AGE CHILDREN IN PUBLIC SCHOOL (PSAC)**

STRUCTURE TYPE /BEDROOMS/ VALUE (2005)/TENURE	TOTAL PSAC	PUBLIC SCHOOL GRADE				
		K-2	3-6	7-9	10-12	Gr. 9 Only
5+ Units--Rent, 1 BR						
All Values	0.04	0.04	0.00	0.00	0.00	0.00
Less than \$850	0.05	0.04	0.01	0.00	0.00	0.00
\$850 to \$1,450	0.06	0.05	0.01	0.00	0.00	0.00
More than \$1,450	0.01	0.01	0.00	0.00	0.00	0.00
5+ Units--Rent, 2 BR						
All Values	0.25	0.08	0.07	0.06	0.03	0.02
Less than \$1,300	0.46	0.19	0.10	0.13	0.04	0.02
\$1,300 to \$1,800	0.18	0.05	0.08	0.02	0.03	0.01
More than \$1,800	0.11	0.02	0.03	0.04	0.02	0.03
5+ Units--Rent, 3 BR						
All Values	1.07	0.36	0.39	0.16	0.16	0.03
Less than \$1,000			Insufficient Sample			
\$1,000 to \$2,050			Insufficient Sample			
More than \$2,050			Insufficient Sample			
2-4 Units, 1 BR						
All Values	0.18	0.02	0.06	0.04	0.06	0.03
Less than \$83,500	0.21	0.03	0.07	0.06	0.05	0.03
\$83,500 to \$129,000	0.21	0.03	0.03	0.07	0.07	0.07
More than \$129,000			Insufficient Sample			
2-4 Units, 2 BR						
All Values	0.39	0.12	0.12	0.09	0.06	0.02
Less than \$119,000	0.46	0.16	0.09	0.10	0.11	0.00
\$119,000 to \$166,000	0.52	0.12	0.18	0.14	0.07	0.05
More than \$166,000	0.18	0.08	0.08	0.01	0.00	0.01
2-4 Units, 3 BR						
All Values	0.91	0.15	0.30	0.25	0.21	0.13
Less than \$103,000	1.44	0.34	0.36	0.39	0.35	0.21
\$103,000 to \$168,500	0.83	0.14	0.36	0.17	0.16	0.04
More than \$168,500	0.50	0.00	0.17	0.21	0.12	0.14
Mobile, 2 BR						
All Values			Insufficient Sample			
Less than \$71,500			Insufficient Sample			
\$71,500 to \$103,000			Insufficient Sample			
More than \$103,000			Insufficient Sample			
Mobile, 3 BR						
All Values			Insufficient Sample			
Less than \$51,500			Insufficient Sample			
\$51,500 to \$71,500			Insufficient Sample			
More than \$71,500			Insufficient Sample			
Mobile, 4 BR						
All Values			Insufficient Sample			
Lowest third			Insufficient Sample			
\$435,500 to \$990,500			Insufficient Sample			
Highest third			Insufficient Sample			



MC Project No. 030218F
Marlboro on Hudson

ATTACHMENT 3



Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

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MEMORANDUM

**To: Andrew Fetherston, P.E., CPESC, CPSWQ, CFM
Connor McCormack, EIT**

**From: A. Peter Russillo, P.E., PTOE
Michael Amendola, I.E.**

Date: September 25, 2018

**Re: Marlboro on Hudson
Town of Marlborough, Ulster County, New York
Trip Generation Comparison
MC Project No. 03-0218F**

Maser Consulting, P.A. has undertaken an evaluation of the potential impact on trip generations based on a revised site plan for the proposed Marlboro on Hudson on the corner of Hillside Avenue & South Street in the Town of Marlborough.

The original site plan from 2003 provided by Maser Consulting P.A. accounted for 36 townhouse dwellings on a lot with an area of 6.29 acres. Since the previous site plan approval, only 12 of the 36 units were built and the site plan has been revised. The revised site plan, also provided by Maser, has the remaining 24 units as 3-bedroom townhouse dwellings.

According to the Institute of Transportation Engineers (ITE) there is no distinction between the trip generation for 2-bedroom and 3-bedroom units. The following is a comparison of the residential trip generation summary between the original site plan and the revised site plan as applied to the 36-unit development. Please note that the Hourly Trip Generation Rates (HTGR) used in the table below for the original site plan are based on data published by the Institute of Transportation Engineers (ITE) as contained in the Trip Generation Handbook, 6th Edition, 1997 as this was the publication used for the trip generation estimates that were provided by Maser

Consulting in 2003. The HGTR used for the revised site plan are based on the current ITE 10th Edition rates.

In 2003, The Land Use Code 230 – Residential Condominium/Townhouse was used to estimate the trips based on the original site plan. Land Use Code 230 does not exist in the most recent edition of the ITE Trip Generation manual (10th edition). In its place, the Lane Use Code 220 – Multi-Family Housing (Low-Rise) that includes the townhouse use was employed to estimate the generated trips for updated site plan.

<u>Original Site Plan</u>				
36 Dwellings (ITE 6th Edition - Land Use Code 230)	Entry		Exit	
	HTGR ¹	Volume	HTGR	Volume
AM Peak Hour	0.11	4	0.53	19
PM Peak Hour	0.50	18	0.22	8
<u>Revised Site Plan</u>				
36 Dwellings (ITE 10th Edition - Land Use Code 220)	Entry		Exit	
	HTGR ¹	Volume	HTGR	Volume
AM Peak Hour	0.11	4	0.39	14
PM Peak Hour	0.42	15	0.25	9

Based upon the above table, utilizing the most current trip generation data, the change in trip rates does not alter, in any significant way, the amount of traffic to be generated under the revised site plan.



MC Project No. 030218F
Marlboro on Hudson

ATTACHMENT 4



PROJECT
SITE 2006

Image © 2013 Google

Google earth

Imagery Date: 9/30/2006 42°36'11.02" N 73°58'50.91" W 0 ft eye at 1243 ft

Tour Guide



PROJECT
SITE 2011

Google earth

Imagery Date: 10/7/2011 41°36'10.37" N 73°58'45.00" W elev. 0 ft eye at 1243 ft

✧ Tour Guide

An aerial photograph of a residential neighborhood. A large, rectangular, undeveloped lot with brown, dry vegetation is the central focus. To its left is a paved road with a yellow dashed line. To its right and above are several houses with dark roofs and some swimming pools. Below the undeveloped lot, a road curves around a grassy area. The text 'PROJECT SITE 2016' is overlaid in a white box at the bottom left of the undeveloped lot.

PROJECT
SITE 2016







MC Project No. 030218F
Marlboro on Hudson

ATTACHMENT 5

GENERAC®

16/20/22 kW

GUARDIAN® SERIES Residential Standby Generators Air-Cooled Gas Engine

16/20/22 kW

1 of 6

INCLUDES:

- True Power™ Electrical Technology
- Two Line LCD Multilingual Digital Evolution™ Controller (English/Spanish/French/Portuguese)
- Two Transfer Switch Options Available:
100 Amp, 16 Circuit Switch or
200 Amp Service Rated Smart Switch,
See Page 5 for Details.
- Electronic Governor
- Standard Wi-Fi™ Remote Monitoring
- System Status & Maintenance Interval LED Indicators
- Sound Attenuated Enclosure
- Flexible Fuel Line Connector
- Direct-To-Dirt Composite Mounting Pad
- Natural Gas or LP Gas Operation
- 5 Year Limited Warranty
- Listed and Labeled by the Southwest Research Institute allowing installation as close as 18" (457 mm) to a structure.*
**Must be located away from doors, windows, and fresh air intakes and in accordance with local codes.*

https://assets.swri.org/library/DirectoryOfListedProducts/ConstructionIndustry/973_DoC_204_13204-01-01_Rev9.pdf

Standby Power Rating

Models G007036-1, G007037-1 (Aluminum - Bisque) - 16 kW 60 Hz
Model G007035-1 (Aluminum - Bisque) - 16 kW 60 Hz
Models G007039-1, G007038-1 (Aluminum - Bisque) - 20 kW 60 Hz
Models G007043-2, G007042-2 (Aluminum - Bisque) - 22 kW 60 Hz



QUIET TEST



Note: CUL certification only applies to unbundled units and units packaged with limited circuit switches. Units packaged with the Smart Switch are UL certified in the USA only.

FEATURES

- **INNOVATIVE ENGINE DESIGN & RIGOROUS TESTING** are at the heart of Generac's success in providing the most reliable generators possible. Generac's G-Force engine lineup offers added peace of mind and reliability for when you need it the most. The G-Force series engines are purpose built and designed to handle the rigors of extended run times in high temperatures and extreme operating conditions.
- **TRUE POWER™ ELECTRICAL TECHNOLOGY:** Superior harmonics and sine wave form produce less than 5% Total Harmonic Distortion for utility quality power. This allows confident operation of sensitive electronic equipment and micro-chip based appliances, such as variable speed HVAC systems.
- **TEST CRITERIA:**
 - ✓ **PROTOTYPE TESTED**
 - ✓ **SYSTEM TORSIONAL TESTED**
 - ✓ **NEMA MG1-22 EVALUATION**
 - ✓ **MOTOR STARTING ABILITY**
- **MOBILE LINK™ REMOTE MONITORING:** FREE with every Guardian Series Home standby generator. Allows you to monitor the status of your generator from anywhere in the world using a smartphone, tablet, or PC. Easily access information such as the current operating status and maintenance alerts. Connect your account to your authorized service dealer for fast, friendly and proactive service. With Mobile Link, you are taken care of before the next power outage.
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION:** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine. Digital voltage regulation at $\pm 1\%$.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's extensive dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component.
- **GENERAC TRANSFER SWITCHES:** Long life and reliability are synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems and controls for total system compatibility.

THE GENERAC PROMISE



*Assembled in the USA using domestic and foreign parts.

16/20/22 kW**Engine**

- Generac G-Force design
- "Spiny-lok" cast iron cylinder walls
- Electronic ignition/spark advance
- Full pressure lubrication system
- Low oil pressure shutdown system
- High temperature shutdown

Maximizes engine "breathing" for increased fuel efficiency. Plateau honed cylinder walls and plasma moly rings helps the engine run cooler, reducing oil consumption resulting in longer engine life.

Rigid construction and added durability provide long engine life.

These features combine to assure smooth, quick starting every time.

Pressurized lubrication to all vital bearings means better performance, less maintenance and longer engine life. Now featuring up to a 2 year/200 hour oil change interval.

Shutdown protection prevents catastrophic engine damage due to low oil.

Prevents damage due to overheating.

Generator

- Revolving field
- Skewed stator
- Displaced phase excitation
- Automatic voltage regulation
- UL 2200 listed

Allows for a smaller, light weight unit that operates 25% more efficiently than a revolving armature generator.

Produces a smooth output waveform for compatibility with electronic equipment.

Maximizes motor starting capability.

Regulates the output voltage to $\pm 1\%$ prevents damaging voltage spikes.

For your safety.

Transfer Switch (if applicable)

- Fully automatic
- NEMA 3R
- Remote mounting

Transfers your vital electrical loads to the energized source of power.

Can be installed inside or outside for maximum flexibility.

Mounts near your existing distribution panel for simple, low-cost installation.

Evolution™ Controls

- Auto/Manual/Off illuminated buttons
- Two-line LCD multilingual display
- Sealed, raised buttons
- Utility voltage sensing
- Generator voltage sensing
- Utility interrupt delay
- Engine warm-up
- Engine cool-down
- Programmable exercise
- Smart battery charger
- Main line circuit breaker
- Electronic governor

Selects the operating mode and provides easy, at-a-glance status indication in any condition.

Provides homeowners easily visible logs of history, maintenance and events up to 50 occurrences.

Smooth, weather-resistant user interface for programming and operations.

Constantly monitors utility voltage, setpoints 65% dropout, 80% pick-up, of standard voltage.

Constantly monitors generator voltage to ensure the cleanest power delivered to the home.

Prevents nuisance start-ups of the engine, adjustable 2-1500 seconds from the factory default setting of five (5) seconds by a qualified dealer.

Ensures engine is ready to assume the load, setpoint approximately 5 seconds.

Allows engine to cool prior to shutdown, setpoint approximately 1 minute.

Operates engine to prevent oil seal drying and damage between power outages by running the generator for 5 minutes every other week. Also offers a selectable setting for weekly or monthly operation providing flexibility and potentially lower fuel costs to the owner.

Delivers charge to the battery only when needed at varying rates depending on outdoor air temperature. Compatible with lead acid and AGM-style batteries.

Protects generator from overload.

Maintains constant 60 Hz frequency.

Unit

- SAE weather protective enclosure
- Enclosed critical grade muffler
- Small, compact, attractive

Sound attenuated enclosures ensure quiet operation and protection against mother nature, withstanding winds up to 150 mph. Hinged key locking roof panel for security. Lift-out front for easy access to all routine maintenance items. Electrostatically applied textured epoxy paint for added durability.

Quiet, critical grade muffler is mounted inside the unit to prevent injuries.

Makes for an easy, eye appealing installation, as close as 18" (457 mm) away from a building.

16/20/22 kW

features and benefits

Installation System

- | | |
|--|--|
| ● 1 ft (305 mm) flexible fuel line connector | Absorbs any generator vibration when connected to rigid pipe. |
| ● Direct-to-dirt composite mounting pad | Complex lattice design prevents settling or sinking of the generator system. |
| ● Integral sediment trap | Prevents particles and moisture from entering the fuel regulator and engine, prolonging engine life. |

Remote Monitoring

- | | |
|--|--|
| ● Ability to view generator status | Monitor your generator via your smartphone, tablet, or computer at any time via the Mobile Link application for complete peace of mind |
| ● Ability to view generator Exercise/Run and Total Hours | Review the generator's complete protection profile for exercise hours and total hours |
| ● Ability to view generator maintenance information | Provides maintenance information for your specific model generator when scheduled maintenance is due |
| ● Monthly report with previous month's activity. | Detailed monthly reports provide historical generator information |
| ● Ability to view generator battery information | Built in battery diagnostics displaying current state of the battery |
| ● Weather information | Provides detailed local ambient weather conditions for generator location |

GENERAC[®]

specifications

Generator

Model	G007035-1, G007036-1, G007037-1 (16 kW)	G007038-1, G007039-1 (20 kW)	G007042-2, G007043-2 (22 kW)
Rated Maximum Continuous Power Capacity (LP)	16,000 Watts*	20,000 Watts*	22,000 Watts*
Rated Maximum Continuous Power Capacity (NG)	16,000 Watts*	18,000 Watts*	19,500 Watts *
Rated Voltage	240	240	240
Rated Maximum Continuous Load Current – 240 Volts (LP/NG)	66.7 / 66.7	83.3 / 75.0	91.7 / 81.3
Total Harmonic Distortion	Less than 5%	Less than 5%	Less than 5%
Main Line Circuit Breaker	70 Amp	90 Amp	100 Amp
Phase	1	1	1
Number of Rotor Poles	2	2	2
Rated AC Frequency	60 Hz	60 Hz	60Hz
Power Factor	1.0	1.0	1.0
Battery Requirement (not included)	12 Volts, Group 26R 540 CCA Minimum or Group 35AGM 650 CCA Minimum		
Unit Weight (lb/kg)	409 / 186	448 / 203	466 / 211
Dimensions (L x W x H) in/mm	48 x 25 x 29 / 1 218 x 638 x 732		
Sound output in dB(A) at 23 ft (7 m) with generator operating at normal load**	67	67	67
Sound output in dB(A) at 23 ft (7 m) with generator in Quiet-Test™ low-speed exercise mode**	55	55	57
Exercise duration	5 min	5 min	5 min

Engine

Type of Engine	GENERAC G-Force 1000 Series		
Number of Cylinders	2	2	2
Displacement	999 cc	999 cc	999 cc
Cylinder Block	Aluminum w/ Cast Iron Sleeve		
Valve Arrangement	Overhead Valve	Overhead Valve	Overhead Valve
Ignition System	Solid-state w/ Magneto	Solid-state w/ Magneto	Solid-state w/ Magneto
Governor System	Electronic	Electronic	Electronic
Compression Ratio	9.5:1	9.5:1	9.5:1
Starter	12 VDC	12 VDC	12 VDC
Oil Capacity Including Filter	Approx. 1.9 qt / 1.8 L	Approx. 1.9 qt / 1.8 L	Approx. 1.9 qt / 1.8 L
Operating rpm	3,600	3,600	3,600
Fuel Consumption			
Natural Gas	ft ³ /hr (m ³ /hr)		
1/2 Load	218 (6.17)	204 (5.78)	228 (6.46)
Full Load	309 (8.75)	301 (8.52)	327 (9.26)
Liquid Propane	ft ³ /hr (gal/hr) [l/hr]		
1/2 Load	74 (2.03) [7.70]	87 (2.37) [8.99]	92 (2.53) [9.57]
Full Load	107 (2.94) [11.11]	130 (3.56) [13.48]	142 (3.90) [14.77]

Note: **Fuel pipe must be sized for full load.** Required fuel pressure to generator fuel inlet at all load ranges - 3.5-7" water column (7-13 mm mercury) for natural gas, 10-12" water column (19-22 mm mercury) for LP gas. For BTU content, multiply ft³/hr x 2500 (LP) or ft³/hr x 1000 (NG). For Megajoule content, multiply m³/hr x 93.15 (LP) or m³/hr x 37.26 (NG)

Controls

Two-Line Plain Text Multilingual LCD Display	Simple user interface for ease of operation.
Mode Buttons:Auto	Automatic Start on Utility failure, 7 day exerciser.
Manual	Start with starter control, unit stays on. If utility fails, transfer to load takes place.
Off	Stops unit. Power is removed. Control and charger still operate.
Ready to Run/Maintenance Messages	Standard
Engine Run Hours Indication	Standard
Programmable start delay between 2-1500 seconds	Standard (programmable by dealer only)
Utility Voltage Loss/Return to Utility Adjustable (Brownout Setting)	From 140-171 V / 190-216 V
Future Set Capable Exerciser/Exercise Set Error Warning	Standard
Run/Alarm/Maintenance Logs	50 Events Each
Engine Start Sequence	Cyclic cranking: 16 sec on, 7 rest (90 sec maximum duration).
Starter Lock-out	Starter cannot re-engage until 5 sec after engine has stopped.
Smart Battery Charger	Standard
Charger Fault/Missing AC Warning	Standard
Low Battery/Battery Problem Protection and Battery Condition Indication	Standard
Automatic Voltage Regulation with Over and Under Voltage Protection	Standard
Under-Frequency/Overload/Stepper Overcurrent Protection	Standard
Safety Fused/Fuse Problem Protection	Standard
Automatic Low Oil Pressure/High Oil Temperature Shutdown	Standard
Overcrank/Overspeed (@ 72 Hz)/rpm Sense Loss Shutdown	Standard
High Engine Temperature Shutdown	Standard
Internal Fault/Incorrect Wiring Protection	Standard
Common External Fault Capability	Standard
Field Upgradable Firmware	Standard

** Sound levels are taken from the front of the generator. Sound levels taken from other sides of the generator may be higher depending on installation parameters. Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271). * Maximum kilovolt amps and current are subject to and limited by such factors as fuel Btu/megajoule content, ambient temperature, altitude, engine power and condition, etc. Maximum power decreases about 3.5 percent for each 1,000 feet (304.8 meters) above sea level; and also will decrease about 1 percent for each 6 °C (10 °F) above 16 °C (60 °F).

16/20/22 kW

Limited Circuits Switch Features

- 16 space, 24 circuit, breakers not included.
- Electrically operated, mechanically-held contacts for fast, positive connections
- Rated for all classes of load, 100% equipment rated, both inductive and resistive.
- 2-pole, 250 VAC contactors.
- 30 millisecond transfer time.
- Dual coil design.
- Rated for both copper and aluminum conductors.
- Main contacts are silver plated or silver alloy to resist welding and sticking.
- NEMA/UL 3R aluminum outdoor enclosure allows for indoor or outdoor mounting flexibility.
- Multi listed for use with 1" standard, tandem, GFCI and AFCI breakers from Siemens, Murray, Eaton and Square D for the most flexible and cost effective install.

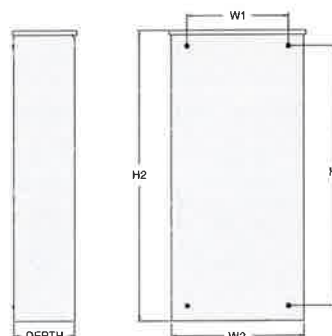
Dimensions

	Height		Width		Depth
	H1	H2	W1	W2	
in	26.75	30.1	10.5	13.5	6.91
mm	679.4	764.3	266.7	343.0	175.4

Wire Ranges		
Conductor Lug	Neutral Lug	Ground Lug
1/0 - #14	2/0 - #14	2/0 - #14

Model	G007036-1 (16kW)
No. of Poles	2
Current Rating (Amps)	100
Voltage Rating (VAC)	120 / 240, 1Ø
Utility Voltage Monitor (Fixed)*	
-Pick-up	80%
-Dropout	65%
Return to Utility*	approx. 15 sec
Exercises bi-weekly for 5 minutes*	Standard
UL Listed	Standard
Total Circuits Available	24
Tandem Breaker Capabilities	8 tandems
Circuit Breaker Protected	
Available RMS Symmetrical Fault Current @ 250 Volts	10,000

*Function of Evolution Controller
Exercise can be set to weekly or monthly



Service Rated Smart Switch Features

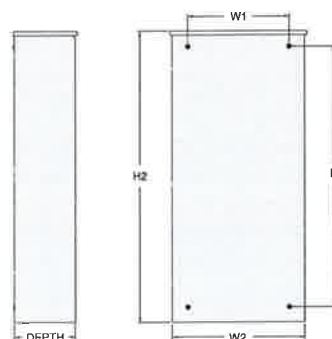
- Includes Digital Power Management Technology standard (DPM).
- Intelligently manages up to four air conditioner loads with no additional hardware.
- Up to four more large (240 VAC) loads can be managed when used in conjunction with Smart Management Modules (SMMs).
- Electrically operated, mechanically-held contacts for fast, clean connections.
- Rated for all classes of load, 100% equipment rated, both inductive and resistive.
- 2-pole, 250 VAC contactors.
- Service equipment rated, dual coil design.
- Rated for both aluminum and copper conductors.
- Main contacts are silver plated or silver alloy to resist welding and sticking.
- NEMA/UL 3R aluminum outdoor enclosure allows for indoor or outdoor mounting flexibility.

Dimensions

	200 Amps 120/240, 1Ø Open Transition Service Rated				
	Height		Width		Depth
	H1	H2	W1	W2	
in	26.75	30.1	10.5	13.5	6.91
mm	679.4	764.3	266.7	343.0	175.4

Model	G007037-1 (16 kW)/G007039-1 (20 kW)/ G007043-2 (22 kW)
No. of Poles	2
Current Rating (Amps)	200
Voltage Rating (VAC)	120/240, 1Ø
Utility Voltage Monitor (Fixed)*	
-Pick-up	80%
-Dropout	65%
Return to Utility*	approx. 13 sec
Exercises bi-weekly for 5 minutes*	Standard
UL Listed	Standard
Enclosure Type	NEMA/UL 3R
Circuit Breaker Protected	22,000
Lug Range	250 MCM - #6

*Function of Evolution Controller
Exercise can be set to weekly or monthly

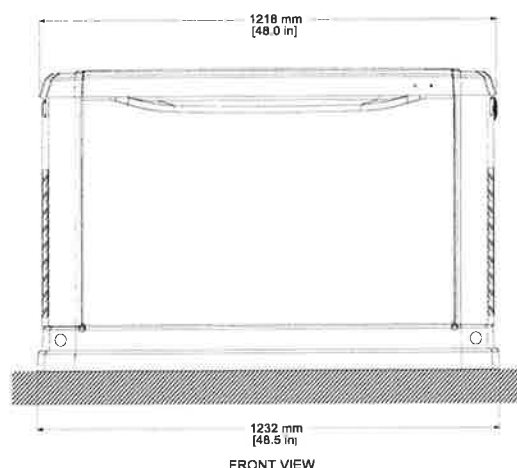
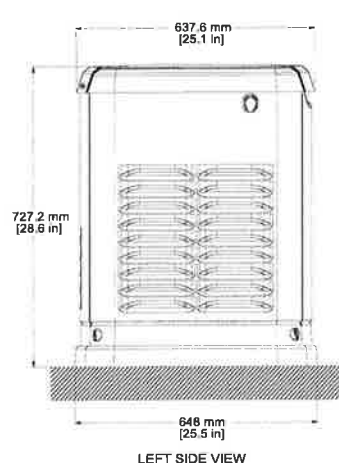


16/20/22 kW

Model #	Product	Description
G007005-0	Wi-Fi LP Fuel Level Monitor	The Wi-Fi enabled LP fuel level monitor provides constant monitoring of the connected LP fuel tank. Monitoring the LP tank's fuel level is an important step in making sure your generator is ready to run during an unexpected power failure. Status alerts are available through a free application to notify when your LP tank is in need of a refill.
G005819-0	26R Wet Cell Battery	Every standby generator requires a battery to start the system. Generac offers the recommended 26R wet cell battery for use with all air-cooled standby product (excluding PowerPact®).
G007101-0	Battery Pad Warmer	The pad warmer rests under the battery. Recommended for use if the temperature regularly falls below 0 °F (-18 °C). (Not necessary for use with AGM-style batteries).
G007102-0	Oil Warmer	Oil warmer slips directly over the oil filter. Recommended for use if the temperature regularly falls below 0 °F (-18 °C).
G007103-1	Breather Warmer	The breather warmer is for use in extreme cold weather applications. For use with Evolution controllers only in climates where heavy icing occurs.
G005621-0	Auxiliary Transfer Switch Contact Kit	The auxiliary transfer switch contact kit allows the transfer switch to lock out a single large electrical load you may not need. Not compatible with 50 amp pre-wired switches.
G007027-0 - Bisque	Fascia Base Wrap Kit (Standard on 22 kW)	The fascia base wrap snaps together around the bottom of the new air cooled generators. This offers a sleek, contoured appearance as well as offering protection from rodents and insects by covering the lifting holes located in the base.
G005703-0 - Bisque	Paint Kit	If the generator enclosure is scratched or damaged, it is important to touch up the paint to protect from future corrosion. The paint kit includes the necessary paint to properly maintain or touch up a generator enclosure.
G006485-0	Scheduled Maintenance Kit	Generac's scheduled maintenance kits provide all the hardware necessary to perform complete routine maintenance on a Generac automatic standby generator.
G006873-0	Smart Management Module (50 Amps)	Smart Management Modules are used in conjunction with the Automatic Transfer Switch to increase its power management capabilities. It provides additional power management flexibility not found in any other power management system.

dimensions & UPCs

Dimensions shown are approximate. Refer to installation manual for exact dimensions. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



Model	UPC
G007035-1	696471074161
G007036-1	696471074154
G007037-1	696471074178
G007038-1	696471074185
G007039-1	696471074192
G007042-2	696471074208
G007043-2	696471074215