AGENDA
HANOVER CITY COUNCIL
SEPTEMBER 1, 2020

MAYOR
CHRIS KAUFFMAN

COUNCIL
DOUG HAMMERSENG
KEN WARPULA
JIM ZAJICEK
MARYANN HALLSTEIN

1. **Call to Order/Pledge of Allegiance: 7:00 p.m.**

2. **Approval of Agenda**

3. **Consent Agenda Items:**
   a. **Approve Minutes of August 18, 2020 City Council Work Session Meeting** *(4)*
   b. **Approve Claims as Presented:** *(6)*

➢ **Claims**	**$**	**38,936.72**
➢ **Payroll**	**$**	**10,528.86**
➢ **P/R taxes & Exp**	**$**	**4,125.94**
➢ **Other Claims**	**$**	**2,640.94**
➢ **Total Claims**	**$**	**56,232.46**

   c. **Res No 09-01-20-86 – Approving Hennepin County Law Enforcement Contract** *(41)*
   d. **Res No 09-01-20-87 – Accepting Donation of Historic Bridge Lighting Updates** *(51)*

4. **Citizen's Forum:**

5. **Public Hearings**

6. **Unfinished Business**
   a. **Hanover Dental Grass**
   b. **500 Kadler Ave NE Driveway**
   c. **Res No 09-01-20-88 – Adopting 2021 Preliminary Budget & Levy** *(52)*

7. **New Business**
   a. **Ordinance 2020-03 – Amending Zoning Ordinance Related to Solar Energy Systems** *(67)*
   b. **Council Meeting Date Changes: 10/6, 11/3, Canvass Election Results**

8. **Reports**

9. **Adjournment**

To: **Mayor Kauffman & Members of the Hanover City Council**

From: **Brian Hagen, City Administrator**

Date: **August 28, 2020**

Re: **Review of September 1, 2020 City Council Agenda**

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1. **Call to Order/Pledge of Allegiance: 7:00 p.m.**

2. **Approval of Agenda**

3. **Consent Agenda Items:**
   a. **Approve Minutes of August 18, 2020 City Council Work Session Meeting** *(4)*
   b. **Approve Claims as Presented:** *(6)*
      - **Claims** **$ 38,936.72**
      - **Payroll** **$ 10,528.86**
      - **P/R taxes & Exp** **$ 4,125.94**
      - **Other Claims** **$ 2,640.94**
      - **Total Claims** **$ 56,232.46**
   c. **Res No 09-01-20-86 – Approving Hennepin County Law Enforcement Contract** *(41)*
   d. **Res No 09-01-20-87 – Accepting Donation of Historic Bridge Lighting Updates** *(51)*

4. **Citizen's Forum:**

5. **Public Hearings**

6. **Unfinished Business**
   a. **Hanover Dental Grass**
      The owner is requesting consideration for the City to not require his site landscaping be converted turf grass. Dr. Tyler Koivisto will be present to discuss.
   b. **500 Kadler Ave NE Driveway**
      The owners would like to discuss the deadline for when their driveway should be required to be installed. The owners will be present to discuss.
   c. **Res No 09-01-20-88 – Adopting 2021 Preliminary Budget & Levy** *(52)*
      Enclosed is a resolution adopting the preliminary Budget & Levy for 2021. As a reminder, the final levy cannot be increased above the preliminary amount.

7. **New Business**
   a. **Ordinance 2020-03 – Amending Zoning Ordinance Related to Solar Energy Systems** *(67)*
      See enclosed ordinance and memo. Also included is educational information.

b. **Council Meeting Date Changes: 10/06, 11/03, Canvass Election Results**
Please bring calendars so we can discuss alternative meeting dates for our regularly scheduled 10/06 and 11/03 meetings. Also, we will need to canvass local election results either November 12th or 13th.

8. **Reports**

9. **Adjournment**

CITY OF HANOVER
CITY COUNCIL MEETING
AUGUST 18, 2020 – DRAFT MINUTES

Call to Order:
Mayor Kauffman called the regular meeting of Tuesday, August 18, 2020 to order at 7:02 p.m. Present were Mayor Chris Kauffman, councilors Doug Hammerseng, Ken Warpula, Jim Zajicek and MaryAnn Hallstein. Also present were City Administrator Brian Hagen, City Planner Cindy Nash, City Engineer Nick Preisler. Guests present were Josh Pomerleau of JP Brooks, Jason Ver Steeg of Duininck, Josh Jacobs of Wits Realty, resident Mat Meyer and several other guests.

Approval of Agenda:
Hagen requested to add Res No 08-18-20-85 appointing a new firefighter to consent, add Res No 08-18-20-84 approving a developers agreement and escrow pledge & payment agreement for River Town Villas as item 7 and noted that a new Res No 08-18-20-83 was provided as language needed to be changed from the version originally included in the packet.
MOTION by Hammerseng to approve the agenda as amended, seconded by Zajicek. **Motion carried unanimously.**

Consent Agenda:
MOTION by Warpula to approve the consent agenda as amended, seconded by Zajicek.

a. **Approve Minutes of August 4, 2020 City Council Meeting**
b. **Approve Claims as Presented:**
   - **Claims $ 72,174.49**
   - **Payroll $ 10,155.79**
   - **P/R taxes & Exp. $ 4,126.01**
   - **Other Claims $ 2,640.94**
   - **Total Claims $ 89,097.23**
c. **Res No 08-18-20-80 – Accepting Donation of a Memorial Bench**
d. **Res No 08-18-20-81 – Accepting Donation of a Memorial Bench**
e. **Res No 08-18-20-82 – Accepting Donation of a Memorial Bench**
f. **Res No 08-18-20-85 – Appointing Probationary Firefighter**

Ordinance 2020-03 – Amending Zoning Ordinance Related to Solar Energy Systems
City Planner Nash outlined a request from a resident to change the ordinance to allow for solar energy systems and the City Council directing the Planning Commission to review. Nash stated the Planning Commission recommended approval of the ordinance included in the packet. Hammerseng stated he had several questions that he wished to be reviewed prior to the Council adopting. Resident Mat Meyer expressed frustration with the delay and stated he was the one who requested the review. He is concerned that with each delay, less rebates would be available for him to benefit from installing a solar energy system on his home. Kauffman explained that the ordinance impacts the entire city and it should be fully reviewed and understood prior to consideration.
MOTION by Hammerseng to have the Planning Commission review the ordinance, seconded by Hallstein. **Motion carried unanimously.**

Concept Plan Review: Rivers Edge of Hanover
City Planner Nash provided a summary of the project and review by Planning Commission, stating Planning Commission recommends approval of the concept plan. The developer, Josh Pomerleau, also provided further detail of his proposed project.

The Council discussed the project and reviewed public comments. After discussion, the Council gave direction to incorporate or consider the following while preparing preliminary plat:

- Adjust first three lots on 5th St. NE and first six lots on the west side of the first street that goes south off of 5th to single family lots
- Extra screening/mature tree plantings along River Rd.
- Carefully consider berm grading impacting existing single-family homes along Riverview Rd.
- Consider adding trail connecting the southwest cul-de-sac to existing trail along River Rd
- Consider grading options to provide a more open Pheasant Run Park to the development.

MOTION by Hammerseng to approve the concept plan for Rivers Edge of Hanover with the above referenced conditions, seconded by Zajicek. **Motion carried unanimously.**

Res No 08-18-20-83 – Approving Final Plat Extension for River Town Villas of Hanover
Nash corrected the date in the Resolution to October 31, 2020 to have the plat recorded. Josh Jacobs stated the project will proceed as planned, but there was a delay due to concerns on how COVID-19 would impact the project. Financing is in place.
MOTION by Warpula to approve Res No 08-18-20-83, seconded by Zajicek. **Motion carried unanimously.**

Res No 08-18-20-84 – Approving Developers Agreement & Escrow Pledge and Payment Agreement for River Town Villas of Hanover
Nash stated that the developer has requested adjusting the financial security to an Escrow Pledge and Payment Agreement. This is the same agreement the City has used for Crow River Heights West Third Addition and the early Grading Agreement for River Town Villas. Nash further stated that City Attorney Squires has not reviewed this and recommended Council approve the agreement subject to Squires' final review.
MOTION by Hallstein to approve Res No 08-18-20-84 subject to City Attorney final review, seconded by Hammerseng. **Motion carried unanimously.**

Reports
Kauffman requested a discussion on the Corona Relief Funds at the September Work Session.

Adjournment
MOTION by Hallstein to adjourn at 9:06 p.m., seconded by Zajicek. **Motion carried unanimously.**

APPROVED BY:

_____
Chris Kauffman, Mayor

ATTEST:

_____
Brian Hagen, City Administrator

CITY OF HANOVER

Payments

Current Period: August 2020

Payments Batch 08-20-20 PAY $9.12

Refer	3043 *MN DEPT OF REVENUE*		Ck# 003043E 8/20/2020			
Cash Payment	E 100-43000-212 Motor Fuels		Petroleum Tax - July 2020			$9.12
Invoice						
Transaction Date	8/20/2020	Due 9/19/2020	Cash	10100	**Total**	$9.12

Fund Summary

	10100 Cash
100 GENERAL FUND	$9.12
	$9.12

Pre-Written Checks	$9.12
Checks to be Generated by the Computer	$0.00
Total	$9.12

CITY OF HANOVER

*Check Summary Register©

Batch: 08-20-20 PAY

	Name	Check Date	Check Amt	
10100 Cash				
3043e	MN DEPT OF REVENUE	8/20/2020	$9.12	Petroleum Tax - July 2020
		Total Checks	$9.12	

FILTER: (([Act Year]='2020' and [period] in (8))) and (Source in ('08-20-20 PAY'))

CITY OF HANOVER

Payments

Current Period: September 2020

Payments Batch 09-01-20 PAY $38,927.60

Refer	3073 *A-1 OUTDOOR POWER, INC.*		Ck# 003055E 9/1/2020			
Cash Payment	E 100-45200-220 Repair/Maint Supply (GE		Weed Whip: Spark Plug, Air Filter, Intank Filter, Air Double Layer Filter			$48.52
Invoice 473382	8/26/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$48.52
Refer	3076 *ALLINA HEALTH SYSTEM*		Ck# 003056E 9/1/2020			
Cash Payment	E 100-42240-310 Other Professional Servi		Medical Directorship / Education - 3rd Quarter 2020			$842.57
Invoice II10026942	7/31/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$842.57
Refer	3068 *AMERICAN PRESSURE INC.*		-			
Cash Payment	E 100-43000-220 Repair/Maint Supply (GE		PW Pressure Washer: Capacitor			$231.25
Invoice 116302	8/24/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$231.25
Refer	3061 *BEAUDRY OIL & PROPANE*		-			
Cash Payment	E 100-43000-212 Motor Fuels		Diesel: Refill of 287.6 Gallons on 8/12/2020			$445.49
Invoice 1644833	8/12/2020					
Cash Payment	E 100-43000-212 Motor Fuels		Gasoline: Refill of 226.7 Gallons on 8/12/2020			$402.39
Invoice 1644834	8/12/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$847.88
Refer	3056 *BELL, DIANNE OR LOREN*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Hall Damage Deposit Release - 8/14 - 8/15/2020 Event			$200.00
Invoice	8/17/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$200.00
Refer	3074 *BURSCHVILLE CONSTRUCTION*		-			
Cash Payment	E 100-43122-224 Street Maint Materials		6/19/2020: Grading of Gravel Roads			$445.00
Invoice 4663	8/23/2020					
Cash Payment	E 100-43122-224 Street Maint Materials		8/13/2020: Grading of Gravel Roads			$565.00
Invoice 4663	8/23/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$1,010.00
Refer	3064 *CARDMEMBER SRVC (CENTRAL B*		-			
Cash Payment	E 100-42210-306 Dues & Subscriptions		2 - Active911 Subscriptions			$28.00
Invoice 192324	7/29/2020					
Cash Payment	E 100-42260-212 Motor Fuels		Premium Gas			$12.24
Invoice 39589	8/3/2020					
Cash Payment	E 100-42220-580 Other Equipment		24 Navy T-Shirts			$378.00
Invoice 22718-1	8/6/2020					
Cash Payment	E 100-42260-212 Motor Fuels		Non-Oxy Fuel			$15.68
Invoice 0230	8/11/2020					
Cash Payment	E 100-42260-212 Motor Fuels		5W30 Synthetic Blend			$10.29
Invoice 1169	8/11/2020					
Transaction Date	8/26/2020	Due 9/25/2020	Cash	10100	**Total**	$444.21
Refer	3057 *Carlson, Matt or Lisa*		-			

CITY OF HANOVER

Payments

Current Period: September 2020

Cash Payment	E 100-48205-810 Refunds & Reimburseme		Hall Damage Deposit Release - 8/16/2020 Event			$200.00
Invoice	8/17/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$200.00
Refer	3069 *CEMSTONE*		-			
Cash Payment	E 100-45200-220 Repair/Maint Supply (GE		EagleView & Mallard Park: Concrete for Mini Biff Pads			$753.00
Invoice C2224736	7/31/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$753.00
Refer	3071 *CENTRAL HYDRAULICS, INC.*		Ck# 003053E 9/1/2020			
Cash Payment	E 100-43000-220 Repair/Maint Supply (GE		Plow Truck Wing: Repairs			$1,211.96
Invoice 00012749	8/10/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$1,211.96
Refer	3049 *CENTRAL WOOD PRODUCTS*		-			
Cash Payment	E 100-45200-225 Landscaping Materials		100 Yards of Wood Chips for Playgrounds			$1,495.00
Invoice 447066	8/19/2020					
Cash Payment	E 100-45200-225 Landscaping Materials		Delivery Charge			$290.00
Invoice 447066	8/19/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$1,785.00
Refer	3053 *Clausen, Shannon*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Shelter Damage Deposit Returned - 8/30/2020 Event Cancelled Due to COVID-19			$100.00
Invoice	8/20/2020					
Cash Payment	R 100-34780 Park Rental Fees		Shelter Rental Fee Returned - 8/30/2020 Event Cancelled Due to COVID-19			$125.00
Invoice	8/20/2020					
Cash Payment	G 100-20400 Sales Tax Payable		Shelter Sales Tax Returned - 8/30/2020 Event Cancelled Due to COVID-19			$9.21
Invoice	8/20/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$234.21
Refer	3047 *COMCAST*		-			
Cash Payment	E 100-43000-321 Telephone		PW: Digital Voice & Internet - September 2020			$165.01
Invoice	8/18/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$165.01
Refer	3070 *CROW RIVER FARM EQUIPMENT*		-			
Cash Payment	E 100-43000-215 Shop Supplies		1.5 x 1.5 x 1/8 Angle - 10' Long			$9.09
Invoice 198197	8/17/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$9.09
Refer	3051 *Dehn, Nicole*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Shelter Damage Deposit Release - 8/22/2020 Event			$100.00
Invoice	8/24/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$100.00
Refer	3066 *ESS BROTHERS AND SONS INC.*		Ck# 003051E 9/1/2020			
Cash Payment	E 602-43252-310 Other Professional Servi		Sanitary Sewer Manhole at Kayla & 34 Intersection			$551.10
Invoice AA6899	8/11/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$551.10

CITY OF HANOVER

Payments

Current Period: September 2020

Refer	3045 *HAGEN, BRIAN*		Ck# 003044E 9/1/2020			
Cash Payment	E 100-41410-310 Other Professional Servi		Mileage - Wright County Government Center on 6/23, 6/25, 7/6, 7/14, 8/4, 8/7, 8/11, 8/12 & 8/13/2020			$124.20
Invoice	8/25/2020					
Cash Payment	E 100-41410-310 Other Professional Servi		Mileage - Hennepin County Public Works in Medina on 7/30/2020			$4.03
Invoice	8/25/2020					
Cash Payment	E 100-41435-331 Travel Expenses		Mileage - WCEDP Tour of Hanover on 8/24/2020			$5.75
Invoice	8/25/2020					
Cash Payment	E 100-41940-321 Telephone		B. Hagen: Cell Phone Reimbursement for 3rd Quarter 2020			$195.00
Invoice	8/25/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$328.98
Refer	3050 *HILL, SARA*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Hall Damage Deposit Release - 8/21 - 8/22/2020 Event			$200.00
Invoice	8/24/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$200.00
Refer	3078 *Kilian, Renee*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Shelter Damage Deposit Release - 8/24/2020 Event			$100.00
Invoice	8/27/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$100.00
Refer	3054 *Kilian, Terry*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Shelter Damage Deposit Release - 8/19/2020 Event			$100.00
Invoice	8/20/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$100.00
Refer	3060 *MARCO TECHNOLOGIES, LLC*		Ck# 003049E 9/1/2020			
Cash Payment	E 100-41570-220 Repair/Maint Supply (GE		Contract Base Rate Charge for 8/20/2020 - 9/19/2020			$176.05
Invoice INV7867318	8/17/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$176.05
Refer	3055 *Maschke-Jordan, Melissa*		-			
Cash Payment	E 100-48205-810 Refunds & Reimburseme		Shelter Damage Deposit Release - 8/17/2020 Event			$100.00
Invoice	8/18/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$100.00
Refer	3063 *MENARDS - BUFFALO*		-			
Cash Payment	E 100-41410-200 Office Supplies (GENER		2020 Primary Election: Paper Towels, 8" Cable Ties, Tape, 2 Pack Surge Protector Outlets, Clear Boxes			$112.52
Invoice 26552	8/10/2020			Project COVID		
Cash Payment	E 603-43000-221 Equipment Parts		Fiberglass Resin, Liquid Hardener, Drain Plug, 90 PVC Elbow, Male Adapter, PVC Bushing			$34.49
Invoice 69883	8/17/2020					
Cash Payment	E 100-43000-215 Shop Supplies		Utility Blades, Nitrile Gloves			$52.96
Invoice 69883	8/17/2020					

CITY OF HANOVER

Payments

Current Period: September 2020

Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$199.97
Refer	3052 *MN DEPT OF LABOR AND INDUST*		Ck# 003047E 9/1/2020			
Cash Payment	E 100-42401-310 Other Professional Servi		Surcharge Fees - 2nd Qtr. 2020 - Confirmation #JUNE0530852020			$991.14
Invoice	8/20/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$991.14
Refer	3072 *MTI DISTRIBUTING*		Ck# 003054E 9/1/2020			
Cash Payment	E 100-45200-220 Repair/Maint Supply (GE		Zero Turn: Blades			$62.07
Invoice 1273556-00	8/17/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$62.07
Refer	3062 *Northland Securities*		-			
Cash Payment	E 201-41330-306 Dues & Subscriptions		Tax Abatement Services for Commercial Development Mercantile Pass			$1,207.50
Invoice 6280	8/6/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$1,207.50
Refer	3059 *PLUNKETTS*		-			
Cash Payment	E 100-41940-310 Other Professional Servi		General Pest Control			$142.72
Invoice 6750093	8/10/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$142.72
Refer	3048 *RANDYS ENVIRONMENTAL SERVI*		Ck# 003046E 9/1/2020			
Cash Payment	E 100-41940-384 Refuse/Garbage Disposa		General Trash - City Hall - September 2020			$237.17
Invoice	8/19/2020					
Cash Payment	E 100-41940-384 Refuse/Garbage Disposa		General Trash - Fire Station - September 2020			$32.16
Invoice	8/19/2020					
Cash Payment	E 100-43245-384 Refuse/Garbage Disposa		Recycling - August 2020 - 1,102 Carts			$3,581.50
Invoice	8/19/2020					
Transaction Date	8/25/2020	Due 9/24/2020	Cash	10100	**Total**	$3,850.83
Refer	3067 *RUSSELL SECURITY RESOURCE I*		Ck# 003052E 9/1/2020			
Cash Payment	E 100-42280-520 Buildings and Structures		Fire Station: 10 Proximity Cards			$85.00
Invoice A37685	7/22/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$85.00
Refer	3077 *TurnOut Management*		-			
Cash Payment	E 100-42220-580 Other Equipment		B. Waldorf Gear: Clean & Repair Gear			$134.36
Invoice 22572	8/7/2020					
Transaction Date	8/27/2020	Due 9/26/2020	Cash	10100	**Total**	$134.36
Refer	3075 *VISA - BANKWEST*		-			
Cash Payment	E 100-43000-220 Repair/Maint Supply (GE		Chevy 5500: Oil Filter			$28.97
Invoice 201944	7/20/2020					
Cash Payment	E 100-41570-220 Repair/Maint Supply (GE		Post It Notes, Clips, Pop Up Post Its			$40.26
Invoice 108581198-001	7/20/2020					
Cash Payment	E 100-43000-260 Uniforms		Public Works: Jeans, Tees, High Vis Shirts, Coveralls			$536.84
Invoice 6192	7/21/2020					
Cash Payment	E 100-41410-200 Office Supplies (GENER		2 Expanding Files for Applications			$48.08
Invoice 108570708-001	7/20/2020					
Cash Payment	E 100-41570-200 Office Supplies (GENER		Legal Size File Folders			$39.78
Invoice 108570708-001	7/20/2020					

CITY OF HANOVER

Payments

Current Period: September 2020

Cash Payment	E 100-41570-200 Office Supplies (GENER	Expanding File Pockets, D Ring View Binder		$111.68
Invoice 108313816-001	7/20/2020			
Cash Payment	E 100-42210-200 Office Supplies (GENER	Dry Erase White Board		$15.99
Invoice 108313816-001	7/20/2020			
Cash Payment	E 100-41570-200 Office Supplies (GENER	450 LabelWriter Turbo		$175.09
Invoice 108639980-001	7/22/2020			
Cash Payment	E 100-41940-321 Telephone	City Hall Phone Services - 6 Lines - 7/23/2020 - 8/22/2020		$233.56
Invoice INV00144373	7/24/2020			
Cash Payment	E 100-43000-321 Telephone	Public Works Phones Services - 2 Lines - 07/23/2020 - 8/22/2020		$78.75
Invoice INV00144373	7/24/2020			
Cash Payment	E 603-43000-221 Equipment Parts	Sweeper: Radiator Re-Cored		$946.87
Invoice 1-46230	7/27/2020			
Cash Payment	E 603-43000-221 Equipment Parts	Sweeper: Fan 20"x1.50		$123.69
Invoice D000001011	7/29/2020			
Cash Payment	E 100-41410-200 Office Supplies (GENER	Crowd Control Poles and Belt Barriers		$2,190.35
Invoice 69206	7/27/2020		Project COVID	
Cash Payment	E 100-42220-260 Uniforms	3 Sets of Boots, 4 Helmet Lights		$1,710.88
Invoice E1985338	7/30/2020			
Cash Payment	E 100-41570-322 Postage	Postage		$595.00
Invoice 687	8/5/2020			
Cash Payment	E 100-41410-200 Office Supplies (GENER	2020 Primary Election: Lunch for Election Judges		$171.66
Invoice 004763	8/11/2020			
Cash Payment	E 100-41410-200 Office Supplies (GENER	2020 Primary Election: Dinner for Election Judges		$208.86
Invoice 68	8/11/2020			
Cash Payment	E 100-41600-310 Other Professional Servi	Office 365 Business Software		$8.86
Invoice E0600BV60W	8/13/2020			
Cash Payment	E 100-41600-310 Other Professional Servi	Microsoft Online Exchange: 30 E-Mail Accounts		$120.00
Invoice E0600BV1DO	8/13/2020			
Cash Payment	E 100-45200-220 Repair/Maint Supply (GE	Sod Cutter Rental to Repair Around Mini Biff		$105.00
Invoice 277741	8/19/2020			
Cash Payment	E 100-41435-310 Other Professional Servi	6 Amazon Charges - Being Disputed		$254.73
Invoice				
Transaction Date	8/27/2020 Due 9/26/2020	Cash 10100	**Total**	$7,744.90

Refer 3046 *WRIGHT-HENNEPIN COOPERATIV* Ck# 003045E 9/1/2020

Cash Payment	E 100-45200-381 Electric Utilities	EagleView Park - 3 Light Poles		$58.47
Invoice 35028213259	8/20/2020			
Cash Payment	E 100-43000-310 Other Professional Servi	PW Building: Fire Alarm Testing / Inspection 10/31/2020		$18.95
Invoice 35028213259	8/20/2020			
Cash Payment	E 100-43000-310 Other Professional Servi	PW Building: Fire Panel Monitoring 10/31/2020		$27.95
Invoice 35028213259	8/20/2020			
Transaction Date	8/25/2020 Due 9/24/2020	Cash 10100	**Total**	$105.37

Refer 3065 *WSB & ASSOCIATES, INC.* Ck# 003050E 9/1/2020

Cash Payment	E 818-41950-310 Other Professional Servi	Mesenbrink Const. / Northern Lines - Site & Building Plan: July 2020		$597.25
Invoice 016501-1-0820	8/25/2020		Project 208282	

CITY OF HANOVER

Payments

Current Period: September 2020

Cash Payment	E 100-41950-303 Engineering Fees	General Engineering: July 2020		$3,231.00
Invoice 015460-7-0820	8/25/2020			
Cash Payment	E 818-41950-310 Other Professional Servi	David & AuriAnna Mooers - On Site Building Variance: July 2020		$420.00
Invoice 015460-7-0820	8/25/2020		Project 208264	
Cash Payment	E 828-41950-310 Other Professional Servi	CRHW 4th Addition - Phase 2 Construction Services - Project Management: July 2020		$904.00
Invoice 012259-18-0820	8/25/2020			
Cash Payment	E 828-41950-310 Other Professional Servi	CRHW 4th Addition - Phase 2 Construction Services - Erosion Control Site Inspections: July 2020		$630.00
Invoice 012259-18-0820	8/25/2020			
Cash Payment	E 818-41950-310 Other Professional Servi	Peak Perspective / Hilltop Coffee - Site & Building Plan: July 2020		$2,223.00
Invoice 016500-1-0820	8/25/2020		Project 208281	
Cash Payment	E 818-41950-310 Other Professional Servi	Fehn Companies - Pit Expansion: July 2020		$912.50
Invoice 014135-14-0820	8/25/2020		Project 208263	
Cash Payment	E 603-41950-310 Other Professional Servi	2020 MS4 Services: July 2020		$811.00
Invoice 013432-14-0820	8/25/2020			
Cash Payment	E 818-41950-310 Other Professional Servi	JBW Holdings / River Town Villas - Grading Agreement: July 2020		$1,833.00
Invoice 013676-16-0820	8/25/2020		Project 208266	
Cash Payment	E 823-41950-310 Other Professional Servi	CRHW 3rd Addition - Phase 3 Construction - Construction Observation: July 2020		$630.00
Invoice 010287-39-0820	8/25/2020			
Transaction Date	8/26/2020 Due 9/25/2020	Cash	10100 **Total**	$12,191.75

Refer	3058 *XCEL ENERGY*	Ck# 003048E 9/1/2020		
Cash Payment	E 100-42280-381 Electric Utilities	Fire Station 07/07/2020 - 08/05/2020		$399.42
Invoice 697190658	8/18/2020			
Cash Payment	E 100-41940-381 Electric Utilities	City Hall 07/07/2020 - 08/05/2020		$1,537.47
Invoice 697190658	8/18/2020			
Cash Payment	E 100-45200-381 Electric Utilities	Historical Bridge Lighting 07/07/2020 - 08/05/2020		$58.41
Invoice 697190658	8/18/2020			
Cash Payment	E 100-43160-381 Electric Utilities	209 LaBeaux Avenue NE 07/07/2020 - 08/05/2020		$38.61
Invoice 697190658	8/18/2020			
Cash Payment	E 100-45200-381 Electric Utilities	Cardinal Circle Park 07/08/2020 - 08/06/2020		$15.58
Invoice 697190658	8/18/2020			
Cash Payment	E 100-45200-381 Electric Utilities	1033 Mallard Street NE 07/08/2020 - 08/06/2020		$11.72
Invoice 697190658	8/18/2020			
Cash Payment	E 100-43160-381 Electric Utilities	751 LaBeaux Avenue NE 07/08/2020 - 08/06/2020		$69.27
Invoice 697190658	8/18/2020			
Cash Payment	E 100-43000-381 Electric Utilities	Public Works Building 07/07/2020 - 08/05/2020		$435.11
Invoice 697190658	8/18/2020			
Cash Payment	E 100-43160-381 Electric Utilities	11234 River Road NE / Downtown Parking Lot 07/08/2020 - 08/05/2020		$7.57
Invoice 697190658	8/18/2020			
Transaction Date	8/25/2020 Due 9/24/2020	Cash	10100 **Total**	$2,573.16

CITY OF HANOVER

Payments

Current Period: September 2020

Fund Summary

	10100 Cash
100 GENERAL FUND	$27,103.20
201 EDA SPECIAL REVENUE FUND	$1,207.50
602 SEWER ENTERPRISE FUND	$551.10
603 STORM WATER ENTERPRISE FUND	$1,916.05
818 MISC ESCROWS FUND	$5,985.75
823 CROW RVR HTS WEST 3RD / BACKES	$630.00
828 CROW RVR HTS 4TH DEVEL AGRMT	$1,534.00
	$38,927.60

Pre-Written Checks	$23,018.50
Checks to be Generated by the Computer	$15,909.10
Total	$38,927.60

CITY OF HANOVER

*Check Summary Register©

Batch: 09-01-20 PAY

	Name	Check Date	Check Amt	
10100	**Cash**			
3044e	Hagen, Brian	9/1/2020	$328.98	Mileage - Wright County Government Center o
3045e	Wright-Hennepin Coop Electric	9/1/2020	$105.37	EagleView Park - 3 Light Poles
3046e	Randy's Environmental Services	9/1/2020	$3,850.83	General Trash - City Hall - September 2020
3047e	MN DEPT OF LABOR AND INDUS	9/1/2020	$991.14	Surcharge Fees - 2nd Qtr. 2020 - Confirmation
3048e	XCEL ENERGY	9/1/2020	$2,573.16	Fire Station 07/07/2020 - 08/05/2020
3049e	MARCO TECHNOLOGIES, LLC	9/1/2020	$176.05	Contract Base Rate Charge for 8/20/2020 - 9/1
3050e	WSB & ASSOCIATES, INC.	9/1/2020	$12,191.75	Mesenbrink Const. / Northern Lines - Site & Bu
3051e	ESS BROTHERS AND SONS INC.	9/1/2020	$551.10	Sanitary Sewer Manhole at Kayla & 34 Intersec
3052e	RUSSELL SECURITY RESOURCE	9/1/2020	$85.00	Fire Station: 10 Proximity Cards
3053e	CENTRAL HYDRAULICS, INC.	9/1/2020	$1,211.96	Plow Truck Wing: Repairs
3054e	MTI DISTRIBUTING	9/1/2020	$62.07	Zero Turn: Blades
3055e	A-1 OUTDOOR POWER, INC.	9/1/2020	$48.52	Weed Whip: Spark Plug, Air Filter, Intank Filter
3056e	ALLINA HEALTH SYSTEM	9/1/2020	$842.57	Medical Directorship / Education - 3rd Quarter
35203	AMERICAN PRESSURE INC.	9/1/2020	$231.25	PW Pressure Washer: Capacitor
35204	BEAUDRY OIL & PROPANE	9/1/2020	$847.88	Diesel: Refill of 287.6 Gallons on 8/12/2020
35205	BELL, DIANNE OR LOREN	9/1/2020	$200.00	Hall Damage Deposit Release - 8/14 - 8/15/202
35206	BURSCHVILLE CONSTRUCTION	9/1/2020	$1,010.00	6/19/2020: Grading of Gravel Roads
35207	CARDMEMBER SRVC (CENTRAL	9/1/2020	$444.21	2 - Active911 Subscriptions
35208	Carlson, Matt or Lisa	9/1/2020	$200.00	Hall Damage Deposit Release - 8/16/2020 Eve
35209	CEMSTONE	9/1/2020	$753.00	EagleView & Mallard Park: Concrete for Mini Bi
35210	CENTRAL WOOD PRODUCTS	9/1/2020	$1,785.00	100 Yards of Wood Chips for Playgrounds
35211	Clausen, Shannon	9/1/2020	$234.21	Shelter Damage Deposit Returned - 8/30/2020
35212	COMCAST	9/1/2020	$165.01	PW: Digital Voice & Internet - September 2020
35213	CROW RIVER FARM EQUIPMEN	9/1/2020	$9.09	1.5 x 1.5 x 1/8 Angle - 10' Long
35214	Dehn, Nicole	9/1/2020	$100.00	Shelter Damage Deposit Release - 8/22/2020
35215	HILL, SARA	9/1/2020	$200.00	Hall Damage Deposit Release - 8/21 - 8/22/202
35216	Kilian, Renee	9/1/2020	$100.00	Shelter Damage Deposit Release - 8/24/2020
35217	Kilian, Terry	9/1/2020	$100.00	Shelter Damage Deposit Release - 8/19/2020
35218	Maschke-Jordan, Melissa	9/1/2020	$100.00	Shelter Damage Deposit Release - 8/17/2020
35219	MENARDS - BUFFALO	9/1/2020	$199.97	2020 Primary Election: Paper Towels, 8" Cable
35220	Northland Securities	9/1/2020	$1,207.50	Tax Abatement Services for Commercial Devel
35221	PLUNKETTS	9/1/2020	$142.72	General Pest Control
35222	TurnOut Management	9/1/2020	$134.36	B. Waldorf Gear: Clean & Repair Gear
35223	VISA - BANKWEST	9/1/2020	$7,744.90	Chevy 5500: Oil Filter
		Total Checks	$38,927.60	

FILTER: (([Act Year]='2020' and [period] in (9))) and (Source in ('09-01-20 PAY'))

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

3050

August 25, 2020

Mr. Brian Hagen
City of Hanover
11250 5th Street NE
Hanover, MN 55341

Re: July 2020 Invoices

Dear Mr. Hagen:

Enclosed please find a list of the current invoices for professional engineering services during the month of July for the City of Hanover.

If you have any questions, please contact me at 651-286-8465.

Sincerely,

WSB & Associates, Inc.

Justin Messner
Principal

Enclosures

nf

Project Budget Tracking

For the period 7/1/2020 - 7/31/2020

Project Name	WSB Project #	Project Manager	Current Invoice	Fee Type	JTD Billed	Comments	Client Invoice Reviewer
HANO - 11039 Lamont Ave	R-016501-000	Preisler, Nicholas	$ 597.25	Hourly	$ 597.25		
HANO - 2020 General Engineering Services	R-015460-000	Preisler, Nicholas	$ 3,651.00	Hourly	$ 23,010.50		Hagen, Brian
HANO - Crow River Heights West 4th Addition	R-012259-000	Preisler, Nicholas	$ 1,534.00	Hourly	$ 70,520.00		Hagen, Brian
HANO - Hilltop Renovation	R-016500-000	Preisler, Nicholas	$ 2,223.00	Hourly	$ 2,223.00		
HANO - Mahler Mining Pit Expansion	R-014135-000	Preisler, Nicholas	$ 912.50	Hourly	$ 24,689.25		Hagen, Brian
HANO - MS4 Services	R-013432-000	Preisler, Nicholas	$ 811.00	Hourly	$ 6,850.00		Hagen, Brian
HANO - River Town Villas	R-013676-000	Preisler, Nicholas	$ 1,833.00	Hourly	$ 20,975.75		Hagen, Brian
HANO- Crow River Heights West 3rd Addition	R-010287-000	Preisler, Nicholas	$ 630.00	Hourly	$ 88,642.00		Hagen, Brian
Final Totals			$ 12,191.75				

701 XENIA AVENUE S
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City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-016501-~~000~~ - 1 - 0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

11039 Lamont Ave Mesenbrink Const. / Northern Lines

Professional Services from July 1, 2020 to July 31, 2020 Site & Building Plan

Phase 001 Plan Review

Project Management

		Hours	Rate	Amount	
Mummah, Rachel	7/13/2020	.25	53.00	13.25	
Project Controls					
Totals		.25		13.25	
Total Labor					**13.25**
			Total this Task		**$13.25**

Plan Review

		Hours	Rate	Amount	
Preisler, Nicholas	7/13/2020	1.50	146.00	219.00	
City engineer review					
Preisler, Nicholas	7/15/2020	1.25	146.00	182.50	
City engineer review					
Preisler, Nicholas	7/22/2020	1.25	146.00	182.50	
Engineering review					
Totals		4.00		584.00	
Total Labor					**584.00**
			Total this Task		**$584.00**
			Total this Phase		**$597.25**
			Total this Invoice		**$597.25**

Billings to Date

	Current	Prior	Total
Labor	597.25	0.00	597.25
Totals	**597.25**	**0.00**	**597.25**

E# 818-41950-310
Misc. Escrow
↳ Engineer
↳ Other Prof. Svcs.

Project # 208282

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-015460-~~000~~ - 7 - 0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

2020 General Engineering Services

Professional Services from July 1, 2020 to July 31, 2020

Phase 001 General Engineering Services

Project Management

		Hours	Rate	Amount
Messner, Justin	7/23/2020	2.00	172.00	344.00
Hanover Bridge Site Visit				
Preisler, Nicholas	7/1/2020	.75	146.00	109.50
10231 Beebe Lake Road grading issue				
Preisler, Nicholas	7/6/2020	.75	146.00	109.50
9761 Jordan Ave new home permit - revised survey review				
Preisler, Nicholas	7/6/2020	1.25	146.00	182.50
10489 Kalland Lane pool permit & follow up with applicant				
Preisler, Nicholas	7/6/2020	1.00	146.00	146.00
9796 Jeremiah Court new home permit engineering review				
Preisler, Nicholas	7/7/2020	.50	146.00	73.00
10202 3rd St NE Shed permit - revised survey review				
Preisler, Nicholas	7/10/2020	1.75	146.00	255.50
Comcast ROW permit - River Town Villas				
Preisler, Nicholas	7/10/2020	.75	146.00	109.50
Comcast ROW permit—112 Millpond Trail				
Preisler, Nicholas	7/13/2020	.75	146.00	109.50
ROW permit - Comcast for River Town Villas				
Preisler, Nicholas	7/15/2020	.75	146.00	109.50
10630 106th Avenue - landscaping permitting questions				
Preisler, Nicholas	7/15/2020	.75	146.00	109.50
ROW Permit - 112 Millpond Trl				
Preisler, Nicholas	7/15/2020	.75	146.00	109.50
ROW permit - Xcel energy for CRHW 4th				
Preisler, Nicholas	7/16/2020	.50	146.00	73.00
1038 Emerald - deck permit				
Preisler, Nicholas	7/16/2020	.50	146.00	73.00
1485 Irvine - deck permit				
Preisler, Nicholas	7/16/2020	.50	146.00	73.00
9806 Jordan Ave - foundation as built review				
Preisler, Nicholas	7/17/2020	.50	146.00	73.00
ROW Permit - 112 Millpond Trl				
Preisler, Nicholas	7/29/2020	.75	146.00	109.50
134 Kadler pool permit engineering review				

Preisler, Nicholas	7/29/2020	.50	146.00	73.00	
533 Kayla Ln deck permit engneering review					
Preisler, Nicholas	7/31/2020	1.25	146.00	182.50	
112 Millpong Trail ROW Permit - site visit to verify sidewalk impacts due to fiber optic line					
Totals		16.25		2,424.50	
Total Labor					**2,424.50**
			Total this Task		**$2,424.50**

Staff Meetings

		Hours	Rate	Amount	
Preisler, Nicholas	7/22/2020	2.00	146.00	292.00	
CSAH 19 Corridor Study meeting					
Preisler, Nicholas	7/27/2020	3.25	146.00	474.50	
Planning commission prep & meeting					
Totals		5.25		766.50	
Total Labor					**766.50**
			Total this Task		**$766.50**

Council Meetings

Unit Billing

Meetings/Council Meetings ($40)

7/31/2020		1.0 Meeting @ 40.00	40.00	
Total Units			**40.00**	**40.00**
		Total this Task		**$40.00**

Environmental Compliance Inspections David & AuriAnna Mooers - On Site Building Variance

		Hours	Rate	Amount
Guell, Benjamin	7/7/2020	.75	84.00	63.00
500 Kadler ESC Inspection				
Guell, Benjamin	7/8/2020	.50	84.00	42.00
500 Kadler ESC Report				
Guell, Benjamin	7/9/2020	.50	84.00	42.00
ESC Rain Event Inpsection 500 Kadler				
Guell, Benjamin	7/10/2020	.25	84.00	21.00
ESC Rain Event Report 500 Kadler				
Guell, Benjamin	7/14/2020	.50	84.00	42.00
500 Kadler Weekly ESC Inspection				
Guell, Benjamin	7/15/2020	.25	84.00	21.00
500 Kadler Weekly ESC Report				
Guell, Benjamin	7/21/2020	.75	84.00	63.00
500 Kadler ESC Inspection				
Guell, Benjamin	7/22/2020	.50	84.00	42.00
500 Kadler ESC Report				
Guell, Benjamin	7/27/2020	.50	84.00	42.00
500 Kadler ESC Inspection				
Guell, Benjamin	7/28/2020	.50	84.00	42.00

Project	R-015460-000	HANO - 2020 General Engineering Services	Invoice	7

500 Kadler ESC Report

Totals	5.00	420.00	
Total Labor			**420.00**
		Total this Task	**$420.00**
		Total this Phase	**$3,651.00**
		Total this Invoice	**$3,651.00**

Billings to Date

	Current	Prior	Total
Labor	3,611.00	19,159.50	22,770.50
Units	40.00	200.00	240.00
Totals	**3,651.00**	**19,359.50**	**23,010.50**

General:

E # 100-41950-303

Engineer 3,231.00

↳ Engineering Fees

E # 818-41950-310

Misc. Escrows

↳ Engineer 420.00

↳ Other Prof. Svcs. Project # 208264

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-012259-000 - 18 - 0825
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

Crow River Heights West 4th Addition
Professional Services from July 1, 2020 to July 31, 2020

Phase 002 Construction Services
Project Management

		Hours	Rate	Amount	
Harrington, Jean	7/16/2020	1.25	110.00	137.50	
Project Management					
Preisler, Nicholas	7/1/2020	1.50	146.00	219.00	
Concrete sidewalk completion inspection					
Preisler, Nicholas	7/22/2020	1.75	146.00	255.50	
LOC reduction review					
Preisler, Nicholas	7/27/2020	2.00	146.00	292.00	
Water service diameter investigation					
Totals		6.50		904.00	
Total Labor					**904.00**
			Total this Task		**$904.00**

Erosion Control Site Inspections

		Hours	Rate	Amount
Guell, Benjamin	7/7/2020	1.00	84.00	84.00
NPDES Inspection				
Guell, Benjamin	7/8/2020	.75	84.00	63.00
NPDES Report				
Guell, Benjamin	7/9/2020	.75	84.00	63.00
NPDES Rain Event Inspection				
Guell, Benjamin	7/10/2020	.50	84.00	42.00
NPDES Rain Event Report				
Guell, Benjamin	7/14/2020	.75	84.00	63.00
NPDES Inspection				
Guell, Benjamin	7/15/2020	.50	84.00	42.00
NPDES Report				
Guell, Benjamin	7/21/2020	1.00	84.00	84.00
NPDES Inspection				
Guell, Benjamin	7/22/2020	.50	84.00	42.00
NPDES Report				
Guell, Benjamin	7/27/2020	1.25	84.00	105.00
NPDES Inspection				

Project	R-012259-000	HANO - Crow River Heights West 4th Addit			Invoice	18
Guell, Benjamin		7/28/2020	.50	84.00	42.00	
NPDES Report						
	Totals		7.50		630.00	
	Total Labor					**630.00**
				Total this Task		**$630.00**
				Total this Phase		**$1,534.00**
				Total this Invoice		**$1,534.00**

Billings to Date

	Current	Prior	Total
Labor	1,534.00	68,986.00	70,520.00
Totals	**1,534.00**	**68,986.00**	**70,520.00**

E# 828-41950-310

CRHW 4th Addition

↳ Engineer

↳ Other Prof. Svcs.

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

Peak Perspective / Hilltop Coffee

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-016500-~~000~~ - 1 - 0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

Hilltop Renovation — Site & Building Plan

Professional Services from July 1, 2020 to July 31, 2020

Phase 001 Plan Review

Project Management

		Hours	Rate	Amount	
Mummah, Rachel	7/13/2020	.25	53.00	13.25	
Project Controls					
Totals		.25		13.25	
Total Labor					**13.25**
			Total this Task		**$13.25**

Plan Review

		Hours	Rate	Amount	
Fallon, Kendra	7/15/2020	3.50	115.00	402.50	
Plan Review					
Fallon, Kendra	7/16/2020	1.75	115.00	201.25	
Plan Review					
Preisler, Nicholas	7/13/2020	2.25	146.00	328.50	
City engineer review					
Preisler, Nicholas	7/15/2020	1.50	146.00	219.00	
City engineer review					
Preisler, Nicholas	7/16/2020	1.00	146.00	146.00	
City engineer review					
Preisler, Nicholas	7/20/2020	2.75	146.00	401.50	
Engineering review					
Preisler, Nicholas	7/21/2020	1.50	146.00	219.00	
Engineering review					
Preisler, Nicholas	7/23/2020	1.50	146.00	219.00	
Engineering review & memo					
Preisler, Nicholas	7/24/2020	.50	146.00	73.00	
Engineering memo					
Totals		16.25		2,209.75	
Total Labor					**2,209.75**
			Total this Task		**$2,209.75**
			Total this Phase		**$2,223.00**

E# 818-41950-310
Misc. Escrows
↳ Engineer
↳ Other Prof. Svcs.

Project # 208281

Project	R-016500-000	HANO - Hilltop Renovation	Invoice	1

Total this Invoice **$2,223.00**

Billings to Date

	Current	Prior	Total
Labor	2,223.00	0.00	2,223.00
Totals	**2,223.00**	**0.00**	**2,223.00**

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-014135-~~000~~ - 14 - 0826
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

Mahler Mining Pit Expansion Fehn Companies

Professional Services from July 1, 2020 to July 31, 2020

Phase 001 Mahler Mining Pit Expansion

Plan Review

		Hours	Rate	Amount	
Preisler, Nicholas	7/9/2020	1.25	146.00	182.50	
Call with staff & call with applicant to discuss intersection options					
Preisler, Nicholas	7/14/2020	.75	146.00	109.50	
15th Street concept D review					
Preisler, Nicholas	7/15/2020	.50	146.00	73.00	
Coordination					
Preisler, Nicholas	7/20/2020	2.25	146.00	328.50	
Meeting prep, meeting at City Hall, follow up					
Preisler, Nicholas	7/28/2020	1.50	146.00	219.00	
Review revised plans (plans dated 7/24/20)					
Totals		6.25		912.50	
Total Labor					**912.50**
			Total this Task		**$912.50**
			Total this Phase		**$912.50**
			Total this Invoice		**$912.50**

Billings to Date

	Current	Prior	Total
Labor	912.50	23,776.75	24,689.25
Totals	**912.50**	**23,776.75**	**24,689.25**

E # 818-41950-310

Misc. Escrows

↳ Engineer

↳ Other Prof. Svcs.

Project # 208263

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-013432-~~000~~ - 14 -0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

MS4 Services

Professional Services from July 1, 2020 to July 31, 2020

Phase 002 2020 MS4 Services
SWPPP

		Hours	Rate	Amount	
Harrington, Jean	7/7/2020	.50	110.00	55.00	
Project Management					
Totals		.50		55.00	
Total Labor					**55.00**
			Total this Task		**$55.00**

Inspections, Inspection Training and MS4

		Hours	Rate	Amount	
Guell, Benjamin	7/31/2020	1.00	84.00	84.00	
Annual Training follow up					
Totals		1.00		84.00	
Total Labor					**84.00**
			Total this Task		**$84.00**

MS4 Staff Training

		Hours	Rate	Amount	
Guell, Benjamin	7/22/2020	4.50	84.00	378.00	
2020 Annual Staff Training					
Guell, Benjamin	7/24/2020	.75	84.00	63.00	
2020 Annual Staff Training					
Guell, Benjamin	7/25/2020	.50	84.00	42.00	
2020 Annual Staff Training					
Guell, Benjamin	7/27/2020	2.25	84.00	189.00	
2020 Hanover Annual Training					
Totals		8.00		672.00	
Total Labor					**672.00**
			Total this Task		**$672.00**
			Total this Phase		**$811.00**

Project	R-013432-000	HANO - MS4 Services	Invoice	14

Billings to Date

	Current	Prior	Total
Labor	811.00	2,143.50	2,954.50
Totals	**811.00**	**2,143.50**	**2,954.50**

Total this Invoice **$811.00**

E# 603-41950-310

Storm Water Ent. Fund

↳ Engineer

↳ Other Prof. Svcs.

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

JBW Holdings
Grading Agreement

August 25, 2020
Project/Invoice: R-013676-~~000~~ - 16 -0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

River Town Villas
Professional Services from July 1, 2020 to July 31, 2020

Phase 001 Preliminary Plat
Plan Review

		Hours	Rate	Amount	
Keller, Kris	7/15/2020	1.75	128.00	224.00	
Grading Plan Review					
Preisler, Nicholas	7/10/2020	1.50	146.00	219.00	
As-built review					
Preisler, Nicholas	7/13/2020	1.75	146.00	255.50	
City engineer review					
Preisler, Nicholas	7/15/2020	.50	146.00	73.00	
City engineer review					
Preisler, Nicholas	7/22/2020	.75	146.00	109.50	
Final grade as-built review					
Preisler, Nicholas	7/30/2020	1.50	146.00	219.00	
Review developer's responses to grading as-built review memo					
Totals		7.75		1,100.00	
Total Labor					**1,100.00**
			Total this Task		**$1,100.00**
			Total this Phase		**$1,100.00**

Phase 002 Construction
Project Management

		Hours	Rate	Amount	
Preisler, Nicholas	7/29/2020	2.00	146.00	292.00	
Xcel Energy ROW permit review					
Totals		2.00		292.00	
Total Labor					**292.00**
			Total this Task		**$292.00**

Erosion Control Site Inspections

		Hours	Rate	Amount	
Guell, Benjamin	7/7/2020	.75	84.00	63.00	
NPDES Inpsection					
Guell, Benjamin	7/8/2020	.50	84.00	42.00	
NPDES Report					
Guell, Benjamin	7/9/2020	.50	84.00	42.00	
NPDES Rain Event Inspection					
Guell, Benjamin	7/10/2020	.50	84.00	42.00	
NPDES Rain Event Report					
Guell, Benjamin	7/14/2020	.50	84.00	42.00	
NPDES Inspection					
Guell, Benjamin	7/15/2020	.25	84.00	21.00	
NPDES Report					
Guell, Benjamin	7/21/2020	.75	84.00	63.00	
NPDES Inspection					
Guell, Benjamin	7/22/2020	.50	84.00	42.00	
NPDES Report					
Guell, Benjamin	7/27/2020	.50	84.00	42.00	
NPDES Inspection					
Guell, Benjamin	7/28/2020	.50	84.00	42.00	
NPDES Report					
Totals		5.25		441.00	
Total Labor					**441.00**
			Total this Task		**$441.00**
			Total this Phase		**$733.00**
			Total this Invoice		**$1,833.00**

Billings to Date

	Current	Prior	Total
Labor	1,833.00	19,142.75	20,975.75
Totals	**1,833.00**	**19,142.75**	**20,975.75**

E# 818-41950-310

Misc. Escrows

↳ Engineer

↳ Other Prof. Svcs.

Project # 208266

701 XENIA AVENUE S
SUITE 300
MINNEAPOLIS, MN
55416

wsb

City of Hanover
Attn: Brian Hagen
11250 5th Street NE
Hanover, MN 55341

August 25, 2020
Project/Invoice: R-010287-~~000~~ - 39 -0820
Reviewed by: Justin Messner
Project Manager: Nicholas Preisler

Crow River Heights West 3rd Addition
Professional Services from July 1, 2020 to July 31, 2020

Phase 002 Construction
Construction Observation

		Hours	Rate	Amount	
Guell, Benjamin	7/7/2020	1.25	84.00	105.00	
NPDES Inspection					
Guell, Benjamin	7/8/2020	.50	84.00	42.00	
NPDES Report					
Guell, Benjamin	7/9/2020	.75	84.00	63.00	
NPDES Rain Event Inspection					
Guell, Benjamin	7/10/2020	.50	84.00	42.00	
NPDES Rain Event Report					
Guell, Benjamin	7/14/2020	.75	84.00	63.00	
NPDES Inspection					
Guell, Benjamin	7/15/2020	.50	84.00	42.00	
NPDES Report					
Guell, Benjamin	7/21/2020	1.00	84.00	84.00	
NPDES Inspection					
Guell, Benjamin	7/22/2020	.75	84.00	63.00	
NPDES Report					
Guell, Benjamin	7/27/2020	1.00	84.00	84.00	
NPDES Report					
Guell, Benjamin	7/28/2020	.50	84.00	42.00	
NPDES Inspection					
Totals		7.50		630.00	
Total Labor					**630.00**
			Total this Task		**$630.00**
			Total this Phase		**$630.00**
			Total this Invoice		**$630.00**

E# 823-41950-310
CRHW 3rd Add. Developers Agreement
↳ Engineer
↳ Other Prof. Svcs.

Billings to Date

	Current	Prior	Total
Labor	630.00	88,012.00	88,642.00
Totals	**630.00**	**88,012.00**	**88,642.00**

CITY OF HANOVER

Cash Balances

September 2020

Fund	Begin Month	GL Debits Month	GL Credits Month	Balance
100 GENERAL FUND	$661,962.40	$0.00	$27,103.20	$634,859.20
107 FIRE DEPT DONATIONS FUND	$26,995.64	$0.00	$0.00	$26,995.64
201 EDA SPECIAL REVENUE FUND	$66,419.63	$0.00	$1,207.50	$65,212.13
205 EDA BUSINESS INCENTIVE FUND	$188,891.95	$0.00	$0.00	$188,891.95
311 2008A GO CIP REFUNDING BOND	-$6,477.28	$0.00	$0.00	-$6,477.28
312 2009A GO IMP REFUNDING BOND	$18,354.47	$0.00	$0.00	$18,354.47
314 2011A GO IMP CROSSOVER REF BD	$571,121.64	$0.00	$0.00	$571,121.64
315 2016A GO CIP BOND	$53,080.73	$0.00	$0.00	$53,080.73
401 GENERAL CAPITAL PROJECTS	$744,672.70	$0.00	$0.00	$744,672.70
402 PARKS CAPITAL PROJECTS	$108,285.97	$0.00	$0.00	$108,285.97
403 FIRE DEPT CAPITAL FUND	$397,088.67	$0.00	$0.00	$397,088.67
404 HISTORICAL CAPITAL PROJ FUND	$0.00	$0.00	$0.00	$0.00
405 PARK DEDICATION FEE	$120,962.37	$0.00	$0.00	$120,962.37
406 GAMBLING PROCEEDS	$12,980.75	$0.00	$0.00	$12,980.75
407 TIF REDEV DIST #1	$12,088.37	$0.00	$0.00	$12,088.37
409 MAHLER PIT - 15TH ST IMP FUND	$108,564.45	$0.00	$0.00	$108,564.45
411 FACILITIES CAPITAL PROJ FUND	$0.00	$0.00	$0.00	$0.00
417 EQUIPMENT CAPITAL FUND	$38,113.02	$0.00	$0.00	$38,113.02
418 STREET CAPITAL PROJ FUND	$515,380.50	$0.00	$0.00	$515,380.50
601 WATER ENTERPRISE FUND	$1,008,473.09	$0.00	$0.00	$1,008,473.09
602 SEWER ENTERPRISE FUND	$371,998.27	$0.00	$551.10	$371,447.17
603 STORM WATER ENTERPRISE FUND	$199,567.38	$0.00	$1,916.05	$197,651.33
611 WATER CAPITAL IMP FUND	$224,227.55	$0.00	$0.00	$224,227.55
612 SEWER CAPITAL IMP FUND	$2,220,632.31	$0.00	$0.00	$2,220,632.31
613 STORM WATER CAPITAL IMP FUND	$701,756.98	$0.00	$0.00	$701,756.98
701 RIVER ROAD CEMETERY	$37,081.74	$0.00	$0.00	$37,081.74
702 CSAH 19 CEMETERY	$4,500.00	$0.00	$0.00	$4,500.00
811 EROSION CONTROL ESCROW FUND	$50,123.53	$0.00	$0.00	$50,123.53
815 LANDSCAPE ESCROW FUND	$50,000.00	$0.00	$0.00	$50,000.00
817 INFRASTRUCTURE ESCROW FUND	$32,000.00	$0.00	$0.00	$32,000.00
818 MISC ESCROWS FUND	$23,915.11	$0.00	$5,985.75	$17,929.36
820 BRIDGES TOWNHOMES ESC FUND	$3,844.69	$0.00	$0.00	$3,844.69
823 CROW RVR HTS WEST 3RD / BACKES	$13,145.10	$0.00	$630.00	$12,515.10
825 CROW RVR HTS FUT WEST PLAT/PUD	$0.00	$0.00	$0.00	$0.00
826 CROW RVR HTS 4TH ADD FINL PLAT	$0.00	$0.00	$0.00	$0.00
827 HANOVER COVE PRELIMINARY PLAT	$0.00	$0.00	$0.00	$0.00
828 CROW RVR HTS 4TH DEVEL AGRMT	$42,331.73	$0.00	$1,534.00	$40,797.73
900 INTEREST	$0.00	$0.00	$0.00	$0.00
	$8,622,083.46	$0.00	$38,927.60	$8,583,155.86

CITY OF HANOVER
Revenue Budget Report - General Fund

Source Alt Code	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
Fund 100 GENERAL FUND						
TAXES	R 100-31000 Property Taxes - General	$0.00	$556,086.34	$1,010,873.00	$454,786.66	55.01%
TAXES	R 100-31020 Property Taxes - Fire	$0.00	$52,202.00	$104,404.00	$52,202.00	50.00%
TAXES	R 100-31800 Franchise Fees	$0.00	$7,137.33	$15,000.00	$7,862.67	47.58%
Source Alt Code TAXES		$0.00	$615,425.67	$1,130,277.00	$514,851.33	54.45%
SERVICE	R 100-34000 Charges for Services	$0.00	$4,401.00	$0.00	-$4,401.00	0.00%
SERVICE	R 100-34101 City Hall Rent Revenue	$0.00	$1,620.00	$11,000.00	$9,380.00	14.73%
SERVICE	R 100-34107 Assessment Search Fees	$0.00	$750.00	$600.00	-$150.00	125.00%
SERVICE	R 100-34108 Administrative Fees	$0.00	$4,612.00	$3,000.00	-$1,612.00	153.73%
SERVICE	R 100-34109 Copies/Faxes	$0.00	$0.00	$50.00	$50.00	0.00%
SERVICE	R 100-34206 Other Public Safety Charges	$0.00	$610.00	$0.00	-$610.00	0.00%
SERVICE	R 100-34207 Fire Protection Services	$0.00	$54,116.98	$107,573.00	$53,456.02	50.31%
SERVICE	R 100-34403 Recycling Rev/Reimb	$0.00	$2,487.20	$6,000.00	$3,512.80	41.45%
SERVICE	R 100-34780 Park Rental Fees	-$125.00	$1,612.30	$2,500.00	$887.70	64.49%
SERVICE	R 100-34940 Cemetery Revenues	$0.00	$0.00	$0.00	$0.00	0.00%
Source Alt Code SERVICE		-$125.00	$70,209.48	$130,723.00	$60,513.52	53.71%
MISC	R 100-36100 Special Assessments	$0.00	$0.00	$0.00	$0.00	0.00%
MISC	R 100-36200 Miscellaneous Revenues	$0.00	-$202.51	$100.00	$302.51	-202.51%
MISC	R 100-36210 Interest Earnings	$0.00	$9,245.27	$0.00	-$9,245.27	0.00%
MISC	R 100-36215 Investment Income/Loss	$0.00	$1,757.01	$0.00	-$1,757.01	0.00%
MISC	R 100-36230 Contributions and Donations	$0.00	$1,217.54	$400.00	-$817.54	304.39%
MISC	R 100-36235 Insurance Dividends	$0.00	$0.00	$0.00	$0.00	0.00%
MISC	R 100-36250 Damage Deposits	$0.00	$2,000.00	$9,000.00	$7,000.00	22.22%
MISC	R 100-36260 Refunds or Reimbursements	$0.00	$3,672.42	$0.00	-$3,672.42	0.00%
MISC	R 100-36290 Sale of Vehicles/Equipment	$0.00	$0.00	$0.00	$0.00	0.00%
MISC	R 100-39101 Sales of General Fixed Asset	$0.00	$0.00	$0.00	$0.00	0.00%
MISC	R 100-39203 Transfer from Other Fund	$0.00	$0.00	$0.00	$0.00	0.00%
Source Alt Code MISC		$0.00	$17,689.73	$9,500.00	-$8,189.73	186.21%
LIC PERM	R 100-32110 Alchoholic Beverages	$0.00	$6,920.00	$6,870.00	-$50.00	100.73%
LIC PERM	R 100-32180 Other Bus. Licenses/Permits	$0.00	$2,120.00	$1,000.00	-$1,120.00	212.00%
LIC PERM	R 100-32210 Building Permits	$0.00	$99,462.55	$100,000.00	$537.45	99.46%
LIC PERM	R 100-32240 Animal Licenses	$0.00	$0.00	$0.00	$0.00	0.00%
LIC PERM	R 100-32260 Solid Waste Hauler Licenses	$0.00	$1,500.00	$1,500.00	$0.00	100.00%
LIC PERM	R 100-32270 Rental Dwelling Licenses	$0.00	$0.00	$1,000.00	$1,000.00	0.00%
LIC PERM	R 100-32280 Other Non-Business Lic/Per	$0.00	$0.00	$50.00	$50.00	0.00%
Source Alt Code LIC PERM		$0.00	$110,002.55	$110,420.00	$417.45	99.62%
INTGOVT	R 100-33400 State Grants and Aids	$0.00	$4,000.00	$0.00	-$4,000.00	0.00%
INTGOVT	R 100-33401 Local Government Aid	$0.00	$0.00	$124,773.00	$124,773.00	0.00%
INTGOVT	R 100-33410 MV Credit	$0.00	$0.00	$1,000.00	$1,000.00	0.00%
INTGOVT	R 100-33420 PERA Aid	$0.00	$0.00	$339.00	$339.00	0.00%
INTGOVT	R 100-33422 State Fire Aid	$0.00	$0.00	$39,000.00	$39,000.00	0.00%
INTGOVT	R 100-33426 State Police Aid	$0.00	$0.00	$5,500.00	$5,500.00	0.00%
INTGOVT	R 100-33610 County Grants/Aid for Roads	$0.00	$0.00	$0.00	$0.00	0.00%
Source Alt Code INTGOVT		$0.00	$4,000.00	$170,612.00	$166,612.00	2.34%
FINES	R 100-35100 Court Fines	$0.00	$1,787.82	$3,000.00	$1,212.18	59.59%
Source Alt Code FINES		$0.00	$1,787.82	$3,000.00	$1,212.18	59.59%
Fund 100 GENERAL FUND		-$125.00	$819,115.25	$1,554,532.00	$735,416.75	52.69%

CITY OF HANOVER

Revenue Budget Report - General Fund

Source Alt Code	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
		-$125.00	$819,115.25	$1,554,532.00	$735,416.75	52.69%

CITY OF HANOVER
Expenditure Budget Report - General Fund

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
Fund 100 GENERAL FUND						
Dept 41110 Council						
COUNCIL	E 100-41110-111 Committee Wages/Mee	$0.00	$4,945.75	$13,000.00	$8,054.25	38.04%
COUNCIL	E 100-41110-122 FICA	$0.00	$299.15	$806.00	$506.85	37.12%
COUNCIL	E 100-41110-123 Medicare	$0.00	$69.96	$189.00	$119.04	37.02%
COUNCIL	E 100-41110-208 Training and Instructio	$0.00	$550.00	$2,000.00	$1,450.00	27.50%
COUNCIL	E 100-41110-306 Dues & Subscriptions	$0.00	$4,237.68	$7,500.00	$3,262.32	56.50%
COUNCIL	E 100-41110-331 Travel Expenses	$0.00	$271.04	$2,000.00	$1,728.96	13.55%
COUNCIL	E 100-41110-437 Other Miscellaneous	$0.00	$527.49	$20,000.00	$19,472.51	2.64%
Dept 41110 Council		$0.00	$10,901.07	$45,495.00	$34,593.93	23.96%
Dept 41330 Boards and Commissions						
BRDCOMM	E 100-41330-111 Committee Wages/Mee	$0.00	$0.00	$5,000.00	$5,000.00	0.00%
BRDCOMM	E 100-41330-208 Training and Instructio	$0.00	$0.00	$500.00	$500.00	0.00%
BRDCOMM	E 100-41330-331 Travel Expenses	$0.00	$0.00	$200.00	$200.00	0.00%
Dept 41330 Boards and Commissions		$0.00	$0.00	$5,700.00	$5,700.00	0.00%
Dept 41400 City Administrator						
CITYADM	E 100-41400-101 Full-Time Employees R	$0.00	$51,104.04	$78,668.00	$27,563.96	64.96%
CITYADM	E 100-41400-121 PERA	$0.00	$4,007.03	$5,900.00	$1,892.97	67.92%
CITYADM	E 100-41400-122 FICA	$0.00	$3,293.78	$4,877.00	$1,583.22	67.54%
CITYADM	E 100-41400-123 Medicare	$0.00	$770.27	$1,141.00	$370.73	67.51%
CITYADM	E 100-41400-134 Employer Paid Life	$0.00	$450.67	$674.00	$223.33	66.86%
CITYADM	E 100-41400-151 Med/Dental Insurance	$0.00	$5,492.19	$8,400.00	$2,907.81	65.38%
CITYADM	E 100-41400-208 Training and Instructio	$0.00	$725.00	$1,500.00	$775.00	48.33%
CITYADM	E 100-41400-306 Dues & Subscriptions	$0.00	$165.00	$200.00	$35.00	82.50%
Dept 41400 City Administrator		$0.00	$66,007.98	$101,360.00	$35,352.02	65.12%
Dept 41410 Elections						
ELECTION	E 100-41410-101 Full-Time Employees R	$0.00	$1,771.00	$13,500.00	$11,729.00	13.12%
ELECTION	E 100-41410-122 FICA	$0.00	$84.87	$837.00	$752.13	10.14%
ELECTION	E 100-41410-123 Medicare	$0.00	$19.86	$196.00	$176.14	10.13%
ELECTION	E 100-41410-142 Unemployment Benefit	$0.00	$0.00	$0.00	$0.00	0.00%
ELECTION	E 100-41410-200 Office Supplies (GENER	$2,731.47	$7,822.08	$5,000.00	-$2,822.08	156.44%
ELECTION	E 100-41410-310 Other Professional Serv	$128.23	$2,273.53	$5,000.00	$2,726.47	45.47%
ELECTION	E 100-41410-351 Legal Notices Publishin	$0.00	$40.63	$200.00	$159.37	20.32%
ELECTION	E 100-41410-400 Repairs & Maint Cont (	$0.00	$1,201.60	$1,200.00	-$1.60	100.13%
ELECTION	E 100-41410-437 Other Miscellaneous	$0.00	$2,201.88	$0.00	-$2,201.88	0.00%
Dept 41410 Elections		$2,859.70	$15,415.45	$25,933.00	$10,517.55	59.44%
Dept 41430 Clerical Staff						
CLERICAL	E 100-41430-101 Full-Time Employees R	$0.00	$31,118.93	$49,926.00	$18,807.07	62.33%
CLERICAL	E 100-41430-121 PERA	$0.00	$2,444.48	$3,744.00	$1,299.52	65.29%
CLERICAL	E 100-41430-122 FICA	$0.00	$2,002.16	$3,095.00	$1,092.84	64.69%
CLERICAL	E 100-41430-123 Medicare	$0.00	$468.29	$724.00	$255.71	64.68%
CLERICAL	E 100-41430-134 Employer Paid Life	$0.00	$314.67	$456.00	$141.33	69.01%
CLERICAL	E 100-41430-142 Unemployment Benefit	$0.00	$0.00	$0.00	$0.00	0.00%
CLERICAL	E 100-41430-151 Med/Dental Insurance	$0.00	$5,492.19	$8,400.00	$2,907.81	65.38%
CLERICAL	E 100-41430-208 Training and Instructio	$0.00	$0.00	$500.00	$500.00	0.00%
CLERICAL	E 100-41430-306 Dues & Subscriptions	$0.00	$45.00	$100.00	$55.00	45.00%
Dept 41430 Clerical Staff		$0.00	$41,885.72	$66,945.00	$25,059.28	62.57%
Dept 41435 Staff Expenses						
STAFFEXP	E 100-41435-260 Uniforms	$0.00	$0.00	$300.00	$300.00	0.00%
STAFFEXP	E 100-41435-310 Other Professional Serv	$254.73	$482.51	$500.00	$17.49	96.50%

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
STAFFEXP	E 100-41435-331 Travel Expenses	$5.75	$92.01	$2,000.00	$1,907.99	4.60%
Dept 41435 Staff Expenses		$260.48	$574.52	$2,800.00	$2,225.48	20.52%
Dept 41530 Accounting						
ACCTING	E 100-41530-101 Full-Time Employees R	$0.00	$35,912.36	$57,920.00	$22,007.64	62.00%
ACCTING	E 100-41530-121 PERA	$0.00	$2,821.67	$4,344.00	$1,522.33	64.96%
ACCTING	E 100-41530-122 FICA	$0.00	$2,332.61	$3,591.00	$1,258.39	64.96%
ACCTING	E 100-41530-123 Medicare	$0.00	$545.56	$840.00	$294.44	64.95%
ACCTING	E 100-41530-134 Employer Paid Life	$0.00	$359.21	$527.00	$167.79	68.16%
ACCTING	E 100-41530-151 Med/Dental Insurance	$0.00	$5,488.62	$8,400.00	$2,911.38	65.34%
ACCTING	E 100-41530-208 Training and Instructio	$0.00	$0.00	$1,000.00	$1,000.00	0.00%
ACCTING	E 100-41530-306 Dues & Subscriptions	$0.00	$50.00	$250.00	$200.00	20.00%
ACCTING	E 100-41530-310 Other Professional Serv	$0.00	$0.00	$0.00	$0.00	0.00%
Dept 41530 Accounting		$0.00	$47,510.03	$76,872.00	$29,361.97	61.80%
Dept 41540 Auditing						
AUDITING	E 100-41540-301 Auditing and Acctg Ser	$0.00	$22,150.00	$22,000.00	-$150.00	100.68%
Dept 41540 Auditing		$0.00	$22,150.00	$22,000.00	-$150.00	100.68%
Dept 41550 Assessing						
ASSESS G	E 100-41550-310 Other Professional Serv	$0.00	$15,152.10	$23,000.00	$7,847.90	65.88%
Dept 41550 Assessing		$0.00	$15,152.10	$23,000.00	$7,847.90	65.88%
Dept 41570 Purchasing						
PURCHASE	E 100-41570-200 Office Supplies (GENER	$326.55	$1,976.43	$3,500.00	$1,523.57	56.47%
PURCHASE	E 100-41570-205 Bank Fees	$0.00	$43.00	$200.00	$157.00	21.50%
PURCHASE	E 100-41570-207 Computer Supplies	$0.00	$3,638.98	$8,000.00	$4,361.02	45.49%
PURCHASE	E 100-41570-220 Repair/Maint Supply (G	$216.31	$2,836.74	$4,500.00	$1,663.26	63.04%
PURCHASE	E 100-41570-322 Postage	$595.00	$807.91	$2,500.00	$1,692.09	32.32%
PURCHASE	E 100-41570-570 Office Equip and Furnis	$0.00	$0.00	$3,000.00	$3,000.00	0.00%
Dept 41570 Purchasing		$1,137.86	$9,303.06	$21,700.00	$12,396.94	42.87%
Dept 41600 Computer						
COMPUTER	E 100-41600-310 Other Professional Serv	$128.86	$4,610.35	$6,000.00	$1,389.65	76.84%
Dept 41600 Computer		$128.86	$4,610.35	$6,000.00	$1,389.65	76.84%
Dept 41610 City Attorney						
CITYATNY	E 100-41610-304 Legal Fees	$0.00	$6,587.00	$20,000.00	$13,413.00	32.94%
Dept 41610 City Attorney		$0.00	$6,587.00	$20,000.00	$13,413.00	32.94%
Dept 41910 Planning and Zoning						
PLANZONG	E 100-41910-310 Other Professional Serv	$0.00	$12,705.25	$20,000.00	$7,294.75	63.53%
Dept 41910 Planning and Zoning		$0.00	$12,705.25	$20,000.00	$7,294.75	63.53%
Dept 41940 General Govt Buildings/Plant						
GOVTBLDG	E 100-41940-210 Operating Supplies (GE	$0.00	$744.16	$3,000.00	$2,255.84	24.81%
GOVTBLDG	E 100-41940-220 Repair/Maint Supply (G	$0.00	$4,677.33	$6,000.00	$1,322.67	77.96%
GOVTBLDG	E 100-41940-306 Dues & Subscriptions	$0.00	$775.00	$550.00	-$225.00	140.91%
GOVTBLDG	E 100-41940-310 Other Professional Serv	$142.72	$3,199.88	$7,500.00	$4,300.12	42.67%
GOVTBLDG	E 100-41940-321 Telephone	$428.56	$3,483.36	$6,400.00	$2,916.64	54.43%
GOVTBLDG	E 100-41940-325 Taxes	$0.00	$272.25	$400.00	$127.75	68.06%
GOVTBLDG	E 100-41940-381 Electric Utilities	$1,537.47	$5,003.98	$9,000.00	$3,996.02	55.60%
GOVTBLDG	E 100-41940-383 Gas Utilities	$0.00	$1,826.78	$5,000.00	$3,173.22	36.54%
GOVTBLDG	E 100-41940-384 Refuse/Garbage Dispos	$269.33	$2,447.54	$3,000.00	$552.46	81.58%
GOVTBLDG	E 100-41940-415 Other Equipment Renta	$0.00	$0.00	$0.00	$0.00	0.00%
GOVTBLDG	E 100-41940-520 Buildings and Structure	$0.00	$767.65	$4,000.00	$3,232.35	19.19%
GOVTBLDG	E 100-41940-560 Furniture and Fixtures	$0.00	$349.42	$2,000.00	$1,650.58	17.47%
GOVTBLDG	E 100-41940-580 Other Equipment	$0.00	$0.00	$0.00	$0.00	0.00%

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
Dept 41940 General Govt Buildings/Plant		$2,378.08	$23,547.35	$46,850.00	$23,302.65	50.26%
Dept 41950 Engineer						
ENGINEER	E 100-41950-303 Engineering Fees	$3,231.00	$13,633.00	$15,000.00	$1,367.00	90.89%
Dept 41950 Engineer		$3,231.00	$13,633.00	$15,000.00	$1,367.00	90.89%
Dept 41960 Insurance						
INSURANCE	E 100-41960-150 Worker s Comp (GENE	$0.00	$14,776.10	$13,000.00	-$1,776.10	113.66%
INSURANCE	E 100-41960-152 Worker s Comp Benefit	$0.00	$0.00	$0.00	$0.00	0.00%
INSURANCE	E 100-41960-361 General Liability Ins	$0.00	$24,652.62	$25,000.00	$347.38	98.61%
Dept 41960 Insurance		$0.00	$39,428.72	$38,000.00	-$1,428.72	103.76%
Dept 41970 Legal Publications						
LEGALPUB	E 100-41970-341 Employment	$0.00	$494.80	$300.00	-$194.80	164.93%
LEGALPUB	E 100-41970-343 Other Advertising	$0.00	$42.50	$200.00	$157.50	21.25%
LEGALPUB	E 100-41970-351 Legal Notices Publishin	$0.00	$134.88	$2,000.00	$1,865.12	6.74%
LEGALPUB	E 100-41970-354 Recording Fees	$0.00	$0.00	$250.00	$250.00	0.00%
Dept 41970 Legal Publications		$0.00	$672.18	$2,750.00	$2,077.82	24.44%
Dept 42000 Public Safety (GENERAL)						
PUBSAFTY	E 100-42000-437 Other Miscellaneous	$0.00	$20.00	$0.00	-$20.00	0.00%
Dept 42000 Public Safety (GENERAL)		$0.00	$20.00	$0.00	-$20.00	0.00%
Dept 42101 Hennepin County Sheriff						
HCSHERIFF	E 100-42101-310 Other Professional Serv	$0.00	$42,184.00	$84,368.00	$42,184.00	50.00%
Dept 42101 Hennepin County Sheriff		$0.00	$42,184.00	$84,368.00	$42,184.00	50.00%
Dept 42102 Wright County Sheriff						
WCSHERIFF	E 100-42102-310 Other Professional Serv	$0.00	$77,608.53	$114,558.00	$36,949.47	67.75%
Dept 42102 Wright County Sheriff		$0.00	$77,608.53	$114,558.00	$36,949.47	67.75%
Dept 42210 Fire Dept Administration						
FIREADMIN	E 100-42210-103 Part-Time Employees	$0.00	$20,030.61	$70,600.00	$50,569.39	28.37%
FIREADMIN	E 100-42210-122 FICA	$0.00	$2,824.86	$4,377.00	$1,552.14	64.54%
FIREADMIN	E 100-42210-123 Medicare	$0.00	$660.69	$1,024.00	$363.31	64.52%
FIREADMIN	E 100-42210-142 Unemployment Benefit	$0.00	$0.00	$300.00	$300.00	0.00%
FIREADMIN	E 100-42210-150 Worker s Comp (GENE	$0.00	$10,219.30	$9,000.00	-$1,219.30	113.55%
FIREADMIN	E 100-42210-200 Office Supplies (GENER	$15.99	$126.85	$350.00	$223.15	36.24%
FIREADMIN	E 100-42210-305 Medical and Dental Fee	$0.00	$3,814.50	$4,000.00	$185.50	95.36%
FIREADMIN	E 100-42210-306 Dues & Subscriptions	$28.00	$1,761.00	$1,000.00	-$761.00	176.10%
FIREADMIN	E 100-42210-361 General Liability Ins	$0.00	$3,639.87	$5,000.00	$1,360.13	72.80%
Dept 42210 Fire Dept Administration		$43.99	$43,077.68	$95,651.00	$52,573.32	45.04%
Dept 42220 Fire Dept Equipment						
FIREEQUIP	E 100-42220-221 Equipment Parts	$0.00	$4,324.23	$11,500.00	$7,175.77	37.60%
FIREEQUIP	E 100-42220-228 Medical Supplies	$0.00	$241.44	$1,500.00	$1,258.56	16.10%
FIREEQUIP	E 100-42220-240 Small Tools and Minor	$0.00	$28.97	$1,000.00	$971.03	2.90%
FIREEQUIP	E 100-42220-260 Uniforms	$1,710.88	$2,359.51	$28,500.00	$26,140.49	8.28%
FIREEQUIP	E 100-42220-580 Other Equipment	$512.36	$1,198.20	$5,000.00	$3,801.80	23.96%
Dept 42220 Fire Dept Equipment		$2,223.24	$8,152.35	$47,500.00	$39,347.65	17.16%
Dept 42240 Fire Dept Training						
FIRETRNG	E 100-42240-208 Training and Instructio	$0.00	$2,963.01	$7,500.00	$4,536.99	39.51%
FIRETRNG	E 100-42240-310 Other Professional Serv	$842.57	$2,744.71	$3,380.00	$635.29	81.20%
FIRETRNG	E 100-42240-331 Travel Expenses	$0.00	$0.00	$1,500.00	$1,500.00	0.00%
Dept 42240 Fire Dept Training		$842.57	$5,707.72	$12,380.00	$6,672.28	46.10%
Dept 42260 Fire Vehicles						
FIREVEH	E 100-42260-212 Motor Fuels	$38.21	$843.85	$3,000.00	$2,156.15	28.13%

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
FIREVEH	E 100-42260-220 Repair/Maint Supply (G	$0.00	$2,849.83	$9,000.00	$6,150.17	31.66%
FIREVEH	E 100-42260-240 Small Tools and Minor	$0.00	$0.00	$1,000.00	$1,000.00	0.00%
FIREVEH	E 100-42260-323 Radio Units	$0.00	$3,737.00	$7,800.00	$4,063.00	47.91%
Dept 42260 Fire Vehicles		$38.21	$7,430.68	$20,800.00	$13,369.32	35.72%
Dept 42280 Fire Stations and Bldgs						
FIREBLDG	E 100-42280-215 Shop Supplies	$0.00	$0.00	$800.00	$800.00	0.00%
FIREBLDG	E 100-42280-220 Repair/Maint Supply (G	$0.00	$2,194.74	$7,500.00	$5,305.26	29.26%
FIREBLDG	E 100-42280-321 Telephone	$0.00	$768.53	$1,000.00	$231.47	76.85%
FIREBLDG	E 100-42280-325 Taxes	$0.00	$0.00	$0.00	$0.00	0.00%
FIREBLDG	E 100-42280-381 Electric Utilities	$399.42	$2,321.88	$4,500.00	$2,178.12	51.60%
FIREBLDG	E 100-42280-383 Gas Utilities	$0.00	$1,338.63	$3,500.00	$2,161.37	38.25%
FIREBLDG	E 100-42280-520 Buildings and Structure	$85.00	$5,354.95	$0.00	-$5,354.95	0.00%
Dept 42280 Fire Stations and Bldgs		$484.42	$11,978.73	$17,300.00	$5,321.27	69.24%
Dept 42290 Fire Relief Association						
FIRERELIEF	E 100-42290-124 Fire Pension Contributio	$0.00	$4,000.00	$39,000.00	$35,000.00	10.26%
FIRERELIEF	E 100-42290-125 Other Retirement Contr	$0.00	$6,048.00	$12,096.00	$6,048.00	50.00%
FIRERELIEF	E 100-42290-301 Auditing and Acctg Ser	$0.00	$0.00	$6,250.00	$6,250.00	0.00%
Dept 42290 Fire Relief Association		$0.00	$10,048.00	$57,346.00	$47,298.00	17.52%
Dept 42401 Building Inspection Admin						
INSPADMN	E 100-42401-310 Other Professional Serv	$991.14	$22,278.75	$40,000.00	$17,721.25	55.70%
Dept 42401 Building Inspection Admin		$991.14	$22,278.75	$40,000.00	$17,721.25	55.70%
Dept 42700 Animal Control						
ANIMCTRL	E 100-42700-310 Other Professional Serv	$0.00	$250.00	$1,000.00	$750.00	25.00%
Dept 42700 Animal Control		$0.00	$250.00	$1,000.00	$750.00	25.00%
Dept 42800 Cemetery						
CEMETERY	E 100-42800-310 Other Professional Serv	$0.00	$0.00	$0.00	$0.00	0.00%
Dept 42800 Cemetery		$0.00	$0.00	$0.00	$0.00	0.00%
Dept 43000 Public Works (GENERAL)						
PUBWRKS	E 100-43000-101 Full-Time Employees R	$0.00	$90,970.48	$146,116.00	$55,145.52	62.26%
PUBWRKS	E 100-43000-102 Full-Time Employees O	$0.00	$0.00	$2,000.00	$2,000.00	0.00%
PUBWRKS	E 100-43000-103 Part-Time Employees	$0.00	$5,814.22	$28,360.00	$22,545.78	20.50%
PUBWRKS	E 100-43000-121 PERA	$0.00	$7,153.46	$12,834.00	$5,680.54	55.74%
PUBWRKS	E 100-43000-122 FICA	$0.00	$6,186.69	$11,775.00	$5,588.31	52.54%
PUBWRKS	E 100-43000-123 Medicare	$0.00	$1,446.89	$2,892.00	$1,445.11	50.03%
PUBWRKS	E 100-43000-134 Employer Paid Life	$0.00	$911.72	$1,548.00	$636.28	58.90%
PUBWRKS	E 100-43000-142 Unemployment Benefit	$0.00	$0.00	$0.00	$0.00	0.00%
PUBWRKS	E 100-43000-151 Med/Dental Insurance	$0.00	$17,756.95	$32,400.00	$14,643.05	54.81%
PUBWRKS	E 100-43000-208 Training and Instructio	$0.00	$1,999.00	$3,500.00	$1,501.00	57.11%
PUBWRKS	E 100-43000-212 Motor Fuels	$847.88	$4,195.72	$12,000.00	$7,804.28	34.96%
PUBWRKS	E 100-43000-215 Shop Supplies	$62.05	$4,007.44	$7,500.00	$3,492.56	53.43%
PUBWRKS	E 100-43000-220 Repair/Maint Supply (G	$1,472.18	$4,961.11	$12,000.00	$7,038.89	41.34%
PUBWRKS	E 100-43000-226 Sign Repair Materials	$0.00	$576.88	$1,500.00	$923.12	38.46%
PUBWRKS	E 100-43000-240 Small Tools and Minor	$0.00	$1,579.35	$10,000.00	$8,420.65	15.79%
PUBWRKS	E 100-43000-260 Uniforms	$536.84	$1,301.91	$3,000.00	$1,698.09	43.40%
PUBWRKS	E 100-43000-310 Other Professional Serv	$46.90	$5,313.48	$7,500.00	$2,186.52	70.85%
PUBWRKS	E 100-43000-321 Telephone	$243.76	$3,851.39	$4,200.00	$348.61	91.70%
PUBWRKS	E 100-43000-325 Taxes	$0.00	$134.75	$200.00	$65.25	67.38%
PUBWRKS	E 100-43000-381 Electric Utilities	$435.11	$2,839.86	$4,000.00	$1,160.14	71.00%
PUBWRKS	E 100-43000-383 Gas Utilities	$0.00	$2,683.10	$7,000.00	$4,316.90	38.33%
PUBWRKS	E 100-43000-520 Buildings and Structure	$0.00	$785.98	$0.00	-$785.98	0.00%

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
Dept 43000 Public Works (GENERAL)		$3,644.72	$164,470.38	$310,325.00	$145,854.62	53.00%
Dept 43121 Paved Streets						
PAVSTRTS	E 100-43121-224 Street Maint Materials	$0.00	$16,351.26	$50,000.00	$33,648.74	32.70%
Dept 43121 Paved Streets		$0.00	$16,351.26	$50,000.00	$33,648.74	32.70%
Dept 43122 Unpaved Streets						
UNPAVSTS	E 100-43122-224 Street Maint Materials	$1,010.00	$4,686.92	$15,000.00	$10,313.08	31.25%
Dept 43122 Unpaved Streets		$1,010.00	$4,686.92	$15,000.00	$10,313.08	31.25%
Dept 43125 Ice & Snow Removal						
SNOWREMO	E 100-43125-224 Street Maint Materials	$0.00	$2,357.70	$20,000.00	$17,642.30	11.79%
Dept 43125 Ice & Snow Removal		$0.00	$2,357.70	$20,000.00	$17,642.30	11.79%
Dept 43160 Street Lighting						
STLGHTG	E 100-43160-381 Electric Utilities	$115.45	$15,346.48	$25,000.00	$9,653.52	61.39%
Dept 43160 Street Lighting		$115.45	$15,346.48	$25,000.00	$9,653.52	61.39%
Dept 43240 Waste (refuse) Disposal						
REFDISPO	E 100-43240-384 Refuse/Garbage Dispos	$0.00	$0.00	$3,000.00	$3,000.00	0.00%
Dept 43240 Waste (refuse) Disposal		$0.00	$0.00	$3,000.00	$3,000.00	0.00%
Dept 43245 Recycling: Refuse						
RECYCLING	E 100-43245-384 Refuse/Garbage Dispos	$3,581.50	$28,509.00	$44,000.00	$15,491.00	64.79%
Dept 43245 Recycling: Refuse		$3,581.50	$28,509.00	$44,000.00	$15,491.00	64.79%
Dept 45186 Senior Center						
SRCENTER	E 100-45186-437 Other Miscellaneous	$0.00	$4,548.22	$9,100.00	$4,551.78	49.98%
Dept 45186 Senior Center		$0.00	$4,548.22	$9,100.00	$4,551.78	49.98%
Dept 45200 Parks (GENERAL)						
PARKS	E 100-45200-212 Motor Fuels	$0.00	$590.56	$2,000.00	$1,409.44	29.53%
PARKS	E 100-45200-220 Repair/Maint Supply (G	$968.59	$8,174.18	$6,000.00	-$2,174.18	136.24%
PARKS	E 100-45200-225 Landscaping Materials	$1,785.00	$2,588.86	$8,000.00	$5,411.14	32.36%
PARKS	E 100-45200-310 Other Professional Serv	$0.00	$0.00	$0.00	$0.00	0.00%
PARKS	E 100-45200-381 Electric Utilities	$144.18	$1,322.55	$2,200.00	$877.45	60.12%
PARKS	E 100-45200-400 Repairs & Maint Cont (	$0.00	$0.00	$0.00	$0.00	0.00%
PARKS	E 100-45200-440 Programs	$0.00	$0.00	$0.00	$0.00	0.00%
PARKS	E 100-45200-580 Other Equipment	$0.00	$6,706.00	$8,000.00	$1,294.00	83.83%
Dept 45200 Parks (GENERAL)		$2,897.77	$19,382.15	$26,200.00	$6,817.85	73.98%
Dept 45500 Libraries (GENERAL)						
LIBRARY	E 100-45500-437 Other Miscellaneous	$0.00	$9,310.82	$11,600.00	$2,289.18	80.27%
Dept 45500 Libraries (GENERAL)		$0.00	$9,310.82	$11,600.00	$2,289.18	80.27%
Dept 48205 Damage Deposit Refunds						
DMGDEPRF	E 100-48205-810 Refunds & Reimbursem	$1,100.00	$4,200.00	$9,000.00	$4,800.00	46.67%
Dept 48205 Damage Deposit Refunds		$1,100.00	$4,200.00	$9,000.00	$4,800.00	46.67%
Dept 49360 Transfers Out						
TRNSFERS	E 100-49360-700 Transfers (GENERAL)	$0.00	$0.00	$0.00	$0.00	0.00%
Dept 49360 Transfers Out		$0.00	$0.00	$0.00	$0.00	0.00%
Dept 49800 Transit (GENERAL)						
TRANSIT	E 100-49800-310 Other Professional Serv	$0.00	$0.00	$0.00	$0.00	0.00%
Dept 49800 Transit (GENERAL)		$0.00	$0.00	$0.00	$0.00	0.00%
Fund 100 GENERAL FUND		$26,968.99	$827,983.15	$1,554,533.00	$726,549.85	53.26%

CITY OF HANOVER

Expenditure Budget Report - General Fund

Dept Abbrev	Account Descr	September 2020 Amt	2020 YTD Amt	2020 YTD Budget	2020 YTD Balance	%YTD Budget
		$26,968.99	$827,983.15	$1,554,533.00	$726,549.85	53.26%

CITY OF HANOVER
COUNTIES OF WRIGHT AND HENNEPIN
STATE OF MINNESOTA

RESOLUTION NO 09-01-20-86

APPROVING THE 2021-2022 HENNEPIN COUNTY LAW ENFORCEMENT AGREEMENT

WHEREAS, the City of Hanover contracts for services with Hennepin County Sheriff's Department to provide public safety services in the City of Hanover; and

WHEREAS, Hennepin County Sheriff's Office has submitted a new draft contract for the 2021-2022 calendar years as attached.

NOW THEREFORE, BE IT RESOLVED, that the City Council of the City of Hanover, Minnesota, hereby approves the attached law enforcement services agreement for the 2021-2022 calendar years.

BE IT FURTHER RESOLVED, that the City Council authorizes its Mayor and City Administrator to execute the agreement on behalf of the City of Hanover.

Adopted by the City Council this 1st day of September, 2020.

APPROVED BY:

_____
Chris Kauffman, Mayor

ATTEST:

_____
Brian Hagen, City Administrator

Contract No: A2010316

LAW ENFORCEMENT SERVICES AGREEMENT

This Agreement is between the COUNTY OF HENNEPIN, STATE OF MINNESOTA, (the "COUNTY") A-2300 Government Center, Minneapolis, Minnesota 55487, on behalf of the Hennepin County Sheriff's Office, 350 S Fifth Street, Room 6, Minneapolis, Minnesota 55414, ("SHERIFF") and The City of Hanover, 11250 Fifth Street NE, Hanover, Minnesota 55341 ("CITY").

WITNESSETH:

WHEREAS, the CITY and COUNTY are both corporate bodies politic under the Laws of the State of Minnesota; and

WHEREAS, both the COUNTY through the SHERIFF and the CITY desire to enter into an agreement for the provision of law enforcement and traffic law enforcement services by the SHERIFF to the CITY; and

WHEREAS, this Agreement is authorized and provided for by Minnesota Statute §436.05;

NOW, THEREFORE, in consideration of the mutual undertakings and agreements hereinafter set forth, the COUNTY through the SHERIFF and the CITY agree as follows:

1. TERM AND COST OF THE AGREEMENT

The term of this agreement shall be for the period commencing January 1, 2021~~19~~ and terminating December 31, 2022~~0~~ unless terminated sooner pursuant to the provisions herein.

Subject to the detailed descriptions of services in Attachment A, the CITY shall pay the COUNTY a quarterly payment in the amount of Twenty-Two Thousand, One Hundred Forty-Seven Dollars and Fifty Cents ($22,147.50/quarter)) for services provided in 2021~~19~~. For services provided in 2022~~0~~, the quarterly payment will be Twenty-Two Thousand, Five Hundred Ninety Dollars and Fifty Cents ($22,590.50/quarter).). CITY's payments are subject to the following:

(i) Should the parties otherwise agree that, for any reason, SHERIFF will provide services for fewer than three (3) hours per day on average, CITY's quarterly payment shall not be reduced accordingly.

(ii) Should the parties otherwise agree that SHERIFF will provide services for more than three (3) hours per day on average, CITY shall pay the COUNTY an hourly rate of Eighty Dollars and Ninety Cents ($80.90/hour)for any hours in excess of three (3) hours per day on average for services provided in 2021~~19~~. For services provided in 2022~~0~~, the hourly rate will be Eighty-Two

Dollars and Fifty-Two Cents ($82.52/hour).~~Seventy Seven Dollars and Five Cents ($77.05/hour).~~

~~(ii)~~

(iii)In the event CITY requests SHERIFF to perform other services not herein described, as set forth pursuant to Attachment A, CITY shall pay the COUNTY an hourly amount of Eighty Dollars and Ninety Cents ($80.90/hour)for additional services performed in 2021~~19~~, and Eighty-Two Dollars and Fifty-Two Cents ($82.52/hour).) for additional services performed in 2022~~0~~.

The cost of these services is based on the SHERIFF's average direct hourly cost of salary, benefits and equipment of the SHERIFF's employees assigned to perform said services under this agreement. The total amount of this agreement shall not exceed Eighty-Eight Thousand, Five Hundred Nintey Dollars ($88,590.00/annual)for services provided in 2021~~19~~, and Ninety Thousand, Three Hundred Sixty-Two Dollars ($90,362.00/annual)for services provided in 2022~~0~~.

2. SERVICES TO BE PROVIDED

The SHERIFF agrees to provide general law and traffic law enforcement services within the corporate limits of the CITY as more fully described in Attachment A, attached and incorporated by this reference.

3. PAYMENT FOR SERVICES

The CITY shall make payment for services to the SHERIFF upon presentation of an invoice from the SHERIFF following the end of each quarter (March 31, June 30, September 30, and December 31). Payment shall be made within twenty (20) days from receipt of the invoice.

4. PROFESSIONAL CREDENTIALS

INTENTIONALLY OMITTED

5. INDEPENDENT CITY

The parties agree that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting either party as an agent, representative, or employee of the other for any purposes or in any manner whatsoever. Each party is to ~~be, and~~be and shall remain an independent contractor with respect to all services performed under this Agreement. Each party represents that it has, or will secure at its own expense, all personnel required to execute, administer, perform and review this agreement. Any and all personnel of the parties or other persons hired by the parties and engaged in the performance of this agreement shall have no contractual relationship with the other party and shall not be considered employees of the other party. Any and all claims that might

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arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of Minnesota on behalf of said personnel or other persons, arising out of employment or alleged employment, including, without limitation, claims of discrimination against the other party, its officers, agents, contractors, or employees shall in no way be the responsibility of the other party. The parties do hereby agree to indemnify and hold harmless the other party, its officers, agents, contractors and employees from any and all such claims irrespective of the determination of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the other party, including, without limitation, tenure rights, medical and hospital care, sick and vacation leave, workers' compensation, re- employment insurance, disability, severance pay, and retirement benefits.

6. NON-DISCRIMINATION AND AFFIRMATIVE ACTION

In accordance with Hennepin County's policies against discrimination, the CITY, COUNTY and SHERIFF agree that no person shall be excluded any person from full employment rights, or participation in, or the benefits of, any program, service or activity on the grounds of race, color, creed, religion, age, sex, disability, marital status, sexual orientation, public assistance status, or national origin; and no person who is protected by applicable Federal or State laws against discrimination shall be otherwise subjected to discrimination.

7. INDEMNIFICATION AND INSURANCE

A. Each party agrees that it will be responsible for its own acts and the results thereof to the extent authorized by law, and shall not be responsible for the acts of the other party and the results thereof. The COUNTY's and the CITY's liability is governed by Minnesota Statutes, Chapter 466 and Minnesota Statute §471.59(1a). Under no circumstances shall a party be required to pay on behalf of itself and other parties, any amounts in excess of the limits on liability established in Minnesota Statutes Chapter 466 applicable to any one party. The statutory limits of liability for some or all of the parties may not be added together or stacked to increase the maximum amount of liability for any party.

B. The COUNTY and CITY each warrant that they are able to comply with the foregoing indemnity requirement through an insurance or self-insurance program.

C. All insurance or self-insurance policies shall be open to inspection by either party and copies of policies or a notice of self- insurance shall be available to either party upon written request. All parties warrant that any policies obtained and maintained under this clause for proof of responsibility shall not be cancelled or materially changed without 30 days prior notice thereof to the COUNTY through the SHERIFF and the CITY.

8. DATA PRACTICES

Each party and its officers, agents, owners, partners, employees, volunteers and subcontractors agree to abide by the provisions of the Minnesota Government Data Practices Act, Minnesota Statutes, Chapter 13, the Health Insurance Portability and

Accountability Act and implementing regulations, if applicable, and all other applicable state and federal laws, rules, regulations and orders relating to data privacy or confidentiality, and as any of the same may be amended. The CITY agrees to defend, indemnify and hold harmless the COUNTY and SHERIFF, its officials, officers, agents, employees, and volunteers from any claims resulting from the CITY's officers', agents', owners', partners', employees', volunteers', assignees' or subcontractors' unlawful disclosure and/or use of such protected data. The COUNTY agrees to defend, indemnify and hold harmless the CITY, its officials, officers, agents, employees, and volunteers from any claims resulting from the COUNTY or SHERIFF, its officers', agents', owners', partners', employees', volunteers', assignees' or subcontractors' unlawful disclosure and/or use of such protected data. The terms of this paragraph shall survive the cancellation or termination of this Agreement.

9. RECORDS – AVAILABILITY/ACCESS

Minnesota Statutes §16C.05, subd. 5is applicable, and that the CITY agrees the COUNTY, the State Auditor, the Legislative Auditor or any of their authorized representatives, at any time during normal business hours, and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt, and transcribe any books, documents, papers, records, etc., which are pertinent to the accounting practices and procedures of CITY and involve transactions relating to this Agreement. CITY shall maintain these materials and allow access during the period of this Agreement and for six (6) years after its termination or cancellation.

10. SUCCESSORS, SUBCONTRACTING AND ASSIGNMENTS

A. CITY binds itself, its partners, successors, assigns and legal representatives to the COUNTY for all covenants, agreements and obligations contained in the contract documents.

11. MERGER AND MODIFICATION

A. It is understood and agreed that the entire Agreement between the parties is contained herein and that this Agreement supersedes all oral agreements and negotiations between the parties relating to the subject matter. All items that are referenced or that are attached are incorporated and made a part of this Agreement. If there is any conflict between the terms of this Agreement and referenced or attached items, the terms of this Agreement shall prevail.

B. Any alterations, variations, modifications, or waivers of provisions of this Agreement shall only be valid when they have been reduced to writing as an amendment to this Agreement signed by the parties.

12. DEFAULT AND CANCELLATION

A. Notwithstanding any provision of this Agreement to the contrary, CITY shall remain liable to the COUNTY for damages sustained by the COUNTY by virtue

of any breach of this Agreement by CITY. Following notice from the COUNTY of the claimed breach and damage, CITY and the COUNTY shall attempt to resolve the dispute in good faith.

B. The above remedies shall be in addition to any other right or remedy available to the COUNTY under this Agreement, law, statute, rule, and/or equity.

C. The COUNTY's failure to insist upon strict performance of any provision or to exercise any right under this Agreement shall not be deemed a relinquishment or waiver of the same, unless consented to in writing. Such consent shall not constitute a general waiver or relinquishment throughout the entire term of the Agreement.

D. This Agreement may be canceled with or without cause by either party upon thirty (30) day written notice.

E. Provisions that by their nature are intended to survive the term, cancellation or termination of this Agreement include but are not limited to: SERVICES TO BE PROVIDED (as to ownership of property); INDEPENDENT CITY; INDEMNIFICATION AND INSURANCE; DATA PRACTICES; RECORDS-AVAILABILITY/ACCESS; DEFAULT AND CANCELLATION; PROMOTIONAL LITERATURE; and MINNESOTA LAW GOVERNS.

13. CONTRACT ADMINISTRATION

In order to coordinate the services of CITY with the activities of the Hennepin County Sheriff's Office so as to accomplish the purposes of this Agreement, Major Jeffrey Storms, 612-596-9870, or successor (Contract Administrator), shall manage this Agreement on behalf of the COUNTY and serve as liaison between the COUNTY and CITY.

Chris Kauffman, Mayor, City of Hanover, 11250 Fifth Street NE, Hanover, Minnesota 55341 shall manage the agreement on behalf of the CITY. CITY may replace such person but shall immediately give written notice to the COUNTY of the name, phone number and fax number (if available) of such substitute person and of any other subsequent substitute person.

14. COMPLIANCE AND NON-DEBARMENT CERTIFICATION

A. CITY shall comply with all applicable federal, state and local statutes, regulations, rules and ordinances currently in force or later enacted.

B. If the source or partial source of funds for payment of services under this Agreement is federal, state or other grant monies, CITY shall comply with all applicable conditions of the specific referenced or attached grant.

C. CITY certifies that it is not prohibited from doing business with either the federal government or the State of Minnesota as a result of debarment or suspension proceedings.

15. PAPER RECYCLING

The COUNTY encourages CITY to develop and implement an office paper and newsprint recycling program.

16. NOTICES

Any notice or demand which must be given or made by a party under this Agreement or any statute or ordinance shall be in writing, and shall be sent registered or certified mail. Notices to the COUNTY shall be sent to the County Administrator with a copy to the originating SHERIFF at the address given in the opening paragraph of the Agreement. Notice to CITY shall be sent to the address stated in the opening paragraph of the Agreement or to the address stated in CITY's Form W-9 provided to the COUNTY.

17. CONFLICT OF INTEREST

CITY affirms that to the best of CITY's knowledge, CITY's involvement in this Agreement does not result in a conflict of interest with any party or entity which may be affected by the terms of this Agreement. CITY agrees that, should any conflict or potential conflict of interest become known to CITY, CITY will immediately notify the COUNTY of the conflict or potential conflict, specifying the part of this Agreement giving rise to the conflict or potential conflict, and will advise the COUNTY whether CITY will or will not resign from the other engagement or representation.

18. PROMOTIONAL LITERATURE

CITY agrees that the terms "Hennepin County" or any derivative shall not be utilized in any promotional literature, advertisements of any type or form or client lists without the express prior written consent of the COUNTY and SHERIFF.

19. MINNESOTA LAWS GOVERN

The Laws of the State of Minnesota shall govern all questions and interpretations concerning the validity and construction of this Agreement and the legal relations between the parties and their performance. The appropriate venue and jurisdiction for any litigation will be those courts located within the County of Hennepin, State of Minnesota. Litigation, however, in the federal courts involving the parties will be in the appropriate federal court within the State of Minnesota. If any provision of this Agreement is held invalid, illegal or unenforceable, the remaining provisions will not be affected.

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Reviewed for COUNTY by
the County Attorney's Office:

_____
Michael Bernard

Date:_____

COUNTY OF HENNEPIN

STATE OF MINNESOTA

By: _____
Marion Greene
Chair of It's County Board
Date:_____

ATTEST:_____
Karen Keller
Deputy/Clerk of County Board

Date: _____

HENNEPIN COUNTY SHERIFF'S OFFICE

_____
Tracey A. Martin
Chief Deputy
Hennepin County Sheriff's Office

Date:_____

By: _____
David Hough
County Administrator

Date: _____

By: _____
Sheri Selton
County Administration Clerk

Date: _____

Document Assembled by:

_____
Kristine Urbowicz
Administrative Assistant

Date:_____

CITY OF HANOVER

CITY warrants that the person who executed this Agreement is authorized to do so on behalf of CITY as required by applicable articles, bylaws, resolutions, or ordinances.

By: _____
It's Mayor
Date:_____

And: _____
It's City Clerk/Administrator
Date:_____

ATTACHMENT A

1. Unless otherwise provided herein, such services shall encompass only those duties and functions which are within the jurisdiction of and customarily rendered by the SHERIFF as established by and in conformance with the Laws of the State of Minnesota which may include but are not limited to enforcement, investigation, emergency response, duties authorized by law, proactive patrol, response to calls for public safety services, crime prevention, investigation of criminal activity, assistance with local and state prosecutions, and other duties agreed to between the Parties from time to time.

2. To the extent that the SHERIFF provides general law enforcement and traffic enforcement services within the CITY, such services shall include and consist of enforcement of the criminal and vehicular traffic statutory provisions of the State of Minnesota and all laws directly related thereto as well as regulatory ordinances adopted by the governing body of the CITY which are applicable hereto. The CITY will provide the SHERIFF with a sufficient number of complete and current copies of regulatory ordinances applicable hereto as well as those which are amendatory thereto prior to their effective dates.

3. Unless otherwise so provided herein, the agreed-upon level of service for the rendition of services compensable hereunder shall average three (3) hours per day, commencing January 1, 2021~~19~~. The selection of the actual dates and hours for the performance of services compensable hereunder shall be subject to the discretion of the SHERIFF.

4. In the event that the SHERIFF, at the request of the CITY, performs other services not herein described or which exceed the agreed level of service provided herein, such services shall be billed in addition to the amount and method of payment provided heretofore. The CITY agrees to pay the direct cost of such services it has so requested. The parties hereby acknowledge and agree that, as long as said additional services are within the scope of duties SHERIFF is authorized to perform, the additional services shall be a non-material modification to this Agreement not requiring an amendment so long as the additional services do not alter the character of the service contemplated herein.

5. The SHERIFF shall provide such enforcement services referenced herein from existing headquarters and facilities, and facilities that the COUNTY may hereafter establish. In the event that the parties of this Agreement concur as to the necessity of maintaining a facility within the city which would not normally be established by the COUNTY or the SHERIFF, the CITY shall provide at its sole expense all necessary space, furnishings, utilities and other equipment and services directly incidental to the existence and operation of the facility. It is further understood that in the event that such facility is established by the CITY and maintained within the corporate limits of the CITY, such facility may be utilized by the SHERIFF in connection with the performance of his duties and functions beyond the corporate limits of the CITY, provided, however, that the performance of such duties and functions shall not be at any additional cost to the CITY.

6. Notwithstanding any other provision of this Agreement, the CITY shall at its sole expense supply any special stationary, supplies, notices or forms which are to be issued in the name of the CITY in connection with the rendition of the services provided herein.

7. The rendition of the enforcement services provided herein, the performance standards, the discipline of the SHERIFF's personnel as well as other matters incidental to the performance of such services including the right to control assigned personnel shall remain within the exclusive authority of the SHERIFF.

8. For the purpose of performing services provided herein, the SHERIFF shall furnish all necessary human resources, supervision, equipment, communications facilities and dispatching services as well as all supplies necessary to maintain the agreed-upon level of service to be rendered herein unless otherwise provided herein.

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CITY OF HANOVER
COUNTIES OF WRIGHT AND HENNEPIN
STATE OF MINNESOTA

RESOLUTION NO 09-01-20-87

ACCEPTING DONATION OF HISTORICL BRIDGE LIGHTING

WHEREAS, Bruce Hoegger desires to donate a finished product of updated bridge lighting for the Historic Bridge; and

WHEREAS, Mr. Hoegger with the assistance of the Hanover Historical Society has designed the project and received approval from the Minnesota State Historic Preservation Office.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Hanover, Minnesota, hereby accepts a donation of bridge lighting for the historic bridge. This includes material and labor costs.

BE IT FURTHER RESOLVED, that the City of Hanover expresses its appreciation for the donation from Bruce Hoegger.

Adopted by the City Council this 1st day of September, 2020.

APPROVED BY:

_____
Chris Kauffman, Mayor

ATTEST:

_____
Brian Hagen, City Administrator

CITY OF HANOVER
COUNTIES OF WRIGHT AND HENNEPIN
STATE OF MINNESOTA

RESOLUTION NO 09-01-20-88

ADOPTING 2021 PRELIMINARY BUDGET AND LEVY

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Hanover, Minnesota, hereby adopts the 2021 Preliminary Budget as follows:

- City of Hanover General Fund Budget
  - General Government $ 540,804
  - Public Safety $ 509,256
  - Public Works $ 473,982
  - Culture and Recreation $ 48,900
  - **Total $ 1,572,942**

- Hanover EDA Budget $ 49,000

BE IT FURTHER RESOLVED, that the City Council hereby levies the following sums of money, collectible 2020, upon the taxable property in the City of Hanover as follows:

- City of Hanover Levy $ 1,926,188
- Hanover EDA Levy $ 49,000

Adopted by the City Council this 1st day of September, 2020.

APPROVED BY:

_____
Chris Kauffman, Mayor

ATTEST:

_____
Brian Hagen, City Administrator

Preliminary Levy Certification
2021 General Operating Revenue Budget

Account	Description	Category	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Budget	06-02-20 Actual	% of Budget	2021 Budget	% Change	Comments
100-31000	Property Taxes - City	TAXES	1,026,640	783,871	842,144	884,973	1,019,515	1,010,873	-		1,011,807		
100-31020	Property Taxes - Fire Dept	TAXES	95,624	112,838	111,200	129,904	101,578	104,404	-		111,227		
100-31800	Franchise Fees	TAXES	13,150	14,500	15,759	15,057	14,558	15,000	3,598		15,000		
	Total Taxes		**1,135,414**	**911,209**	**969,103**	**1,029,934**	**1,135,651**	**1,130,277**	**3,598**	**0%**	1,138,034	**1%**	
100-32110	Alcoholic Beverages	LIC PERM	10,370	10,420	10,420	7070	5,870	6,870	6,870		6,870		5 Liquor License Renewals
100-32180	Other Bus. Lic. & Permits	LIC PERM	362	482	2,870	1790	1,340	1,000	575		1,000		Utility Permits / Solicitors License
100-32210	Building Permits	LIC PERM	139,675	180,198	82,122	87711	105,146	100,000	54,428		100,000		
100-32240	Animal Licenses	LIC PERM	260	200	100	0	0	0	0		-		
100-32260	Solid Waste Hauler Licenses	LIC PERM	500	1,500	1,500	1500	1,500	1,500	1,500		1,500		
100-32270	Rental Dwelling Licenses	LIC PERM	-	1,215	90	1180	0	1,000	0		-		
100-32280	Other Non-Bus. Lic. & Permits	LIC PERM	45	55	66	47	51	50	0		50		Burn Permits
	Total Lic Perm		**151,212**	**194,070**	**97,168**	**99,298**	**113,907**	**110,420**	**63,373**	**57%**	109,420	**-1%**	
100-33400	State Grants and Aid	INTGOVT	38,757	-	30,772	27,989	4,925	-	4,000		-		
100-33401	Local Gov't Aid (LGA)	INTGOVT	105,859	107,496	108,169	117,651	118,250	124,773	-		126,192		Certified Amount
100-33410	MV Credit	INTGOVT	1,866	1,697	1,583	1,319	1,259	1,000	-		1,000		
100-33420	PERA Aid	INTGOVT	339	339	339	339	339	339	-		339		
100-33422	State Fire Aid	INTGOVT	42,219	39,121	37,428	39,020	41,187	39,000	-		41,000		Estimate
100-33426	State Police Aid	INTGOVT	5,566	5,729	5,911	5,984	6,283	5,500	-		5,500		Estimate
100-33610	County Grants / Aid for Roads	INTGOVT	13,342	-	-	-	6,155	-	-		-		
	Total Intgovt		**207,947**	**154,382**	**184,202**	**192,302**	**178,398**	**170,612**	**4,000**	**2%**	174,031	**2%**	
100-34000	Charges for Service	SERVICE	-	-	-	3,759	5,335	5,000	-		5,000		Clean-up Day
100-34101	City Hall Rentals	SERVICE	8,915	8,315	10,698	12,699	14,650	11,000	1,175		12,000		
100-34107	Assessment Searches	SERVICE	475	400	750	775	825	600	650		600		
100-34108	Administrative Fees	SERVICE	2,447	2,433	3,300	5,756	7,200	3,000	2,550		3,000		
100-34109	Copies/Faxes	SERVICE	15	127	35	48	3	50	-		50		
100-34206	Other Public Safety Charges	SERVICE			250	415	620	-	610		-		Fire Services Fees / WC SRU
100-34207	Fire Protection	SERVICE	107,464	104,785	114,825	141,161	110,756	107,573	-		108,206		Reflects Only Operating Portion
100-34403	Recycling Rev / Reimb	SERVICE	6,902	6,372	6,928	6,149	6,042	6,000	-		6,000		Grants from the Counties
100-34780	Park Shelter Rental Fees	SERVICE	2,805	2,687	2,220	2,050	1,904	2,500	-		2,500		
100-34940	Cemetery Revenues	SERVICE	1,950	3,700	6,050	3,500	13,150	-	-		-		Moved this to Cemtery Cap. Fund
	Total Service		**130,973**	**128,819**	**145,057**	**176,312**	**160,485**	**135,723**	**4,985**	**4%**	137,356	**1%**	
100-35100	Court Fines	FINES	2,643	2,254	5,167	6,725	3,668	3,000	1,498		3,000		
	Total Fines		**2,643**	**2,254**	**5,167**	**6,725**	**3,668**	**3,000**	**1,498**	**50%**	3,000	**0%**	
100-36100	Special Assessments	MISC	429	2,013	856	-	-	-	-		-		Lawn Mowing Assessed
100-36200	Misc Revenues	MISC	13,012	10,454	1,733	2,748	1,511	100	2,352		100		Compost Card Replacements
100-36210	Interest Earnings	MISC	36,318	16,286	19,127	11,113	(12,741)	-	2,642		-		
100-36215	Investment Income/Loss	MISC	(100)	(1,872)	(2,872)	(2,235)	8,038	-	1,757		-		
100-36218	Grants	MISC	6,280				-	-	-		-		
100-36230	Contributions & Donations	MISC	8,597	6,000	2,425	375	1,360	400	1,218		1,000		No Longer Due to 10% Req.
100-36235	Insurance Dividends	MISC	11,500	12,801	3,109	1,429	1,322		-		-		
100-36250	Damage Deposits	MISC	6,501	100	-	-	13,250	9,000	400		10,000		
100-36260	Refunds or Reimbursements	MISC	-	4	181	419	41	-	-		-		

100-36290	Sale of Vehicles/Equipment	MISC	-	1,702	773	-	392	-	-		-	
100-39101	Sales of General Fixed Assets	MISC		120,917	-	-	-	-	-		-	
100-39203	Transfers from Other Funds	MISC	-	19,200	-	-	-	-	-		-	
	Total Misc		**82,538**	**187,606**	**25,334**	**13,849**	**13,173**	**9,500**	**8,368**	**88%**	11,100	**17%**
	Total Revenue		**1,710,727**	**1,578,339**	**1,426,030**	**1,518,420**	**1,605,283**	**1,559,532**	**85,822**	**6%**	**1,572,942**	**0.86%**

Preliminary Levy Certification
2021 General Operating Expenditure Budget

Account	Description	Category	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Budget	06-02-20 Actual	% of Budget	2021 Budget	% Change	Dollar Change	Comments
General Government														
100-41110-111	Committe Wages	COUNCIL	9,881	10,692	11,967	10,500	12,379	13,000	121		13,000		0	
100-41110-122	FICA	COUNCIL	632	658	740	623	766	806	-		806		0	
100-41110-123	Medicare	COUNCIL	143	154	173	146	179	189	-		189		0	
100-41110-208	Training & Instruction	COUNCIL	365	-	575	345	1,300	2,000	550		2,000		0	
100-41110-306	Dues & Subscriptions	COUNCIL	6,488	7,856	6,507	7,079	7,208	7,500	4,238		7,500		0	
100-41110-331	Travel Expenses	COUNCIL	76	-	138	752	1,489	2,000	271		2,000		0	
100-41110-437	Discretionary Miscellaneous	COUNCIL	3,128	11,287	6,035	3,880	622	20,000	429		20,000		0	
	Total Council		**20,766**	**30,646**	**26,136**	**23,324**	**23,943**	**45,495**	**5,608**	**12%**	**45,495**	**0%**	**-**	
100-41330-111	Committe Wages	BRDS & COMM	2,820	3,270	4,380	3,000	4,170	5,000	-		5,000		0	
100-41330-208	Training & Instruction	BRDS & COMM	-	-	-	-	150	500	-		500		0	
100-41330-331	Travel Expenses	BRDS & COMM	21	-	-	-	-	200	-		200		0	
	Total Brds & Comm		**2,936**	**3,270**	**4,380**	**3,000**	**4,320**	**5,700**	**-**	**-**	**5,700**	**0%**	**-**	
100-41400-101	Full-Time Wages	CITY ADMIN	75,707	67,580	69,612	72,339	75,266	78,668	32,181		86,115		7,447	
100-41400-121	PERA	CITY ADMIN	5,870	5,043	5,217	5,400	5,614	5,900	2,588		6,459		559	
100-41400-122	FICA	CITY ADMIN	4,852	4,169	4,313	4,464	4,634	4,877	2,127		5,339		462	
100-41400-123	Medicare	CITY ADMIN	1,135	975	1,009	1,044	1,084	1,141	497		1,249		108	
100-41400-134	Employer Paid Life	CITY ADMIN	414	368	380	520	647	674	292		769		95	Estimate: Life + LTD/STD
100-41400-151	Health Insurance Premium	CITY ADMIN	5,237	8,372	8,401	8,319	8,400	8,400	3,554		8,400		0	Monthly Allotment
100-41400-208	Training & Instruction	CITY ADMIN	1,310	410	681	1,304	1,283	1,500	725		1,500		0	
100-41400-306	Dues & Subscriptions	CITY ADMIN	256	267	254	145	302	200	98		200		0	
	Total City Admin		**98,574**	**87,184**	**89,866**	**93,534**	**97,231**	**101,360**	**42,062**	**41%**	**110,030**	**9%**	**8,671**	
100-41410-101	Full-Time Wages	ELECTION						13,500	1,425		-		(13,500)	
100-41410-122	FICA	ELECTION						837	88		-		(837)	
100-41410-123	Medicare	ELECTION						196	21		-		(196)	
100-41410-200	Office Supplies	ELECTION	-	1,631	64	4,085	(1,566)	5,000	3,303		-		(5,000)	Supplies and Voting Booth Upgrades
100-41410-310	Other Professional Services	ELECTION	79	4,016	-	3,879	-	5,000	14		-		(5,000)	
100-41410-351	Legal Notices Publishing	ELECTION	-	174	-	64	-	200	-		-		(200)	
100-41410-400	Repairs & Maintenance Cont	ELECTION	-	1,014	1,652	1,658	1,602	1,200	1,202		2,000		800	Equipment Maint.
100-41410-437	Other Miscellaneous	ELECTION							2,202		-		0	Costs for PNP Election Only
	Total Election		**79**	**6,835**	**1,716**	**9,686**	**36**	**25,933**	**8,254**	**32%**	**2,000**	**-92%**	**(23,933)**	
100-41430-101	Full-Time Wages	CLERICAL	53,307	42,267	43,842	46,042	47,854	49,926	19,640		52,176		2,250	
100-41430-121	PERA	CLERICAL	3,798	3,154	3,285	3,436	3,570	3,744	1,584		3,913		169	
100-41430-122	FICA	CLERICAL	3,715	2,607	2,716	2,840	2,944	3,095	1,297		3,235		139	
100-41430-123	Medicare	CLERICAL	869	610	635	664	689	724	303		757		33	
100-41430-134	Employer Paid Life	CLERICAL	1,581	1,309	1,402	1,495	439	456	204		514		58	Estimate: Life + LTD/STD
100-41430-151	Health Insurance Premium	CLERICAL	7,844	8,400	8,401	8,400	8,400	8,400	3,554		8,400		0	Monthly Allotment
100-41430-208	Training & Instruction	CLERICAL	-	255	-	-	180	500	-		500		0	
100-41430-306	Dues & Subscriptions	CLERICAL	-	-	18	23	45	100	23		100		0	
	Total Clerical		**74,280**	**58,602**	**60,298**	**62,900**	**64,120**	**66,946**	**26,604**	**40%**	**69,594**	**4%**	**2,648**	
100-41435-260	Uniforms	STAFF EXP	-	-	-	200	246	300	-		300		0	
100-41435-310	Other Professional Services	STAFF EXP	787	1,157	373	240	150	500	228		500		0	
100-41435-331	Travel Expenses	STAFF EXP	1,277	589	750	953	2,026	2,000	86		2,000		0	
	Total Staff Exp		**3,290**	**1,746**	**1,124**	**1,393**	**2,422**	**2,800**	**314**	**11%**	**2,800**	**0%**	**-**	
100-41530-101	Full-Time Wages	ACCNT	24,895	51,158	51,257	53,275	55,413	57,920	22,610		60,540		2,621	
100-41530-121	PERA	ACCNT	1,800	3,818	3,491	3,978	4,133	4,344	1,824		4,541		197	
100-41530-122	FICA	ACCNT	1,446	2,941	3,096	3,274	3,417	3,591	1,508		3,754		162	
100-41530-123	Medicare	ACCNT	338	688	724	766	799	840	353		878		38	
100-41530-134	Employer Paid Life	ACCNT	348	980	820	1,035	507	527	232		587		61	Estimate: Life + LTD/STD
100-41530-151	Health Insurance Premium	ACCNT	3,322	10,800	8,500	8,366	8,044	8,400	3,551		8,400		0	Monthly Allotment
100-41530-208	Training & Instruction	ACCNT	-	690	285	210	285	1,000	-		1,000		0	
100-41530-306	Dues & Subscriptions	ACCNT	-	235	123	89	50	250	50		200		(50)	
100-41530-310	Other Professional Services	ACCNT	35,468	2,457	6,211	3,251	3,573	-	-		435		435	No Audit Prep, Annual Disc. Report

	Total Accnt		**68,471**	**73,767**	**74,507**	**74,243**	**76,222**	**76,871**	**30,128**	**39%**	**80,335**	**5%**	**3,463**	
100-41540-301	Auditing & Accounting	AUDITING	23,400	29,243	24,065	21,050	22,150	22,000	18,150		22,000		0	Audit Costs
	Total Auditing & Accounting		**23,400**	**29,243**	**24,065**	**21,050**	**22,150**	**22,000**	**18,150**	**83%**	**22,000**	**0%**	**-**	
100-41550-310	Other Professional Services	ASSESSING	17,772	17,828	18,942	20,610	21,091	23,000	166		24,000		1,000	
	Total Assesing		**17,772**	**17,828**	**18,942**	**20,610**	**21,091**	**23,000**	**166**	**1%**	**24,000**	**4%**	**1,000**	
100-41570-200	Office Supplies	PURCHASING	3,146	3,077	2,581	2,681	1,764	3,500	1,146		3,500		0	
100-41570-205	Bank Fees	PURCHASING	49	187	387	(15)	126	200	12		200		0	
100-41570-207	Computer Supplies	PURCHASING	3,092	5,876	11,453	5,256	6,560	8,000	3,306		8,000		0	
100-41570-220	Repair/Maintenance Supply	PURCHASING	2,367	3,670	2,751	3,927	4,445	4,500	1,988		4,500		0	copier
100-41570-322	Postage	PURCHASING	2,463	2,840	2,267	1,867	2,557	2,500	2		2,500		0	
100-41570-570	Office Equipment/Furniture	PURCHASING	210	-	9,611	1,122	-	3,000	-		3,000		0	
	Total Purchasing		**11,326**	**15,650**	**29,049**	**14,838**	**15,453**	**21,700**	**6,453**	**30%**	**21,700**	**0%**	**-**	
100-41600-310	Other Professional Services	COMPUTER	-	2,542	4,616	7,446	6,707	6,000	3,699		6,000		0	
	Total Computer		**3,693**	**2,542**	**4,616**	**7,446**	**6,707**	**6,000**	**3,699**	**62%**	**6,000**	**0%**	**-**	
100-41610-304	Legal Fees	ATTORNEY	18,947	25,247	21,223	12,540	14,230	20,000	3,395		20,000		0	
	Total Attorney		**18,947**	**25,247**	**21,223**	**12,540**	**14,230**	**20,000**	**3,395**	**17%**	**20,000**	**0%**	**-**	
100-41910-310	Other Professional Services	PLANNING & ZONING	19,945	24,771	25,492	27,194	29,638	20,000	5,224		20,000		0	
	Total Planning & Zoning		**19,945**	**24,771**	**25,492**	**27,194**	**29,638**	**20,000**	**5,224**	**26%**	**20,000**	**0%**	**-**	
100-41940-210	Operating Supplies	BLDG & GRNDS	617	1,567	1,080	-	1,871	3,000	-		3,000		0	Cleaning Supp, Garbage Bags, TP, Salt, etc.
100-41940-220	Repair/Maintenance Supply	BLDG & GRNDS	9,461	10,286	7,361	9,192	6,301	6,000	2,087		6,000		0	Siren Maint, Fire Ext. Maint, etc.
100-41940-306	Dues & Subscriptions	BLDG & GRNDS	250	250	250	620	525	550	775		850		300	Liquor License, Drug Tests
100-41940-310	Other Professional Services	BLDG & GRNDS	6,016	7,208	7,214	7,244	5,837	7,500	2,046		7,500		0	Cleaning Contract and Pest Control
100-41940-321	Telephone	BLDG & GRNDS	3,282	3,139	4,204	7,918	4,431	6,400	2,126		5,400		(1,000)	Comcast + B. Hagen Cell Phone + Digium
100-41940-325	Taxes	BLDG & GRNDS	220	214	349	262	25	400	272		400		0	Outlot Prop. Taxes, Sales & Use Tax
100-41940-381	Electric Utilities	BLDG & GRNDS	14,122	8,917	8,793	14,332	10,903	9,000	2,407		9,000		0	City Hall
100-41940-383	Gas Utilities	BLDG & GRNDS	3,642	3,047	5,100	9,401	3,631	5,000	1,689		5,000		0	City Hall
100-41940-384	Refuse/Garbage Disposal	BLDG & GRNDS	2,540	2,552	2,937	2,884	3,107	3,000	1,640		3,500		500	City Hall, FD
100-41940-415	Other Equipment Rental	BLDG & GRNDS	121	-	-	-	-	-	-		-		0	
100-41940-520	Buildings & Structures	BLDG & GRNDS	5,346	3,402	2,112	9,831	1,794	4,000	648		4,000		0	
100-41940-560	Furniture & Fixtures	BLDG & GRNDS	1,961	242	2,069	1,450	4,743	2,000	-		2,000		0	
100-41940-580	Other Equipment	BLDG & GRNDS	1,263	226	-	7,942	-	-	-		-		0	
	Total Bldg & Grnds		**48,842**	**41,048**	**41,468**	**71,076**	**43,169**	**46,850**	**13,690**	**29%**	**46,650**	**0%**	**(200)**	
100-41950-303	Engineering Fee	ENGINEERING	23,493	25,659	16,135	14,179	24,550	15,000	6,389		15,000		0	
	Total Engineering		**23,493**	**25,659**	**16,135**	**14,179**	**24,550**	**15,000**	**6,389**	**43%**	**15,000**	**0%**	**-**	
100-41960-150	Workers Comp Premium	INSURANCE	259	8,543	9,376	14,254	13,130	13,000	5,087		13,500		500	Entire City Less Fire Department Estimate
100-41960-361	General Liability Insurance	INSURANCE	24,785	19,245	21,536	21,498	23,660	25,000	10,001		25,000		0	Entire City Less Fire Department Estimate
	Total Insur		**25,045**	**27,788**	**30,912**	**35,753**	**36,790**	**38,000**	**15,088**	**40%**	**38,500**	**1%**	**500**	
100-41970-341	Employment	LEGAL PUB	435	274	362	-	146	300	495		300		0	
100-41970-343	Other Advertising	LEGAL PUB	-	39	104	40	119	200	43		100		(100)	WC Journal Subscription
100-41970-351	Legal Notices Publishing	LEGAL PUB	768	1,814	337	274	227	2,000	31		400		(1,600)	
100-41970-354	Recording Fees	LEGAL PUB	-	-	53	166	53	250	-		200		(50)	
	Total Legal Pub		**1,203**	**2,127**	**856**	**480**	**544**	**2,750**	**568**	**21%**	**1,000**	**-64%**	**(1,750)**	
100-48205-810	Refunds & Reimbursements	DAMAGE DEPOSIT	11,079	3,416	-	-	12,650	9,000	1,600		10,000		1,000	
	Total Damage Deposit		**11,079**	**3,416**	**-**	**-**	**12,650**	**9,000**	**1,600**	**18%**	**10,000**	**11%**	**1,000**	
	Total General Gov't		**473,140**	**477,369**	**470,784**	**493,245**	**495,265**	**549,405**	**187,392**	**34%**	**540,804**	**-2%**	**(8,601)**	
Public Safety														
100-42000-437	Other Misc	PUBSAFTY					20	-	20		50		50	Transient/Peddlers Background Checks
	Total Other Misc		**-**	**-**	**-**	**-**	**20**	**-**	**20**	**#DIV/0!**	**50**	**#DIV/0!**	**50**	
100-42101-310	Other Professional Services	HC SHERIFF	69,333	71,405	78,731	81,096	82,716	84,368	21,092		88,590		4,222	Contract Price
	Total HC Sheriff		**69,333**	**71,405**	**78,731**	**81,096**	**82,716**	**84,368**	**21,092**	**25%**	**88,590**	**5%**	**4,222**	
100-42102-310	Other Professional Services	WC SHERIFF	95,900	99,168	105,708	110,171	110,961	114,558	47,733		119,682		5,124	Contract Price
	Total WC Sheriff		**95,900**	**99,168**	**105,708**	**110,171**	**110,961**	**114,558**	**47,733**	**42%**	**119,682**	**4%**	**5,124**	
100-42210-103	Part-Time Wages	FIRE ADMIN	27,804	31,640	47,144	65,365	48,632	70,600	(1,814)		80,600		10,000	Increased for change to Officer stipends
100-42210-122	FICA	FIRE ADMIN	1,714	1,943	1,483	3,271	3,635	4,377	1,470		4,997		620	
100-42210-123	Medicare	FIRE ADMIN	401	454	347	765	850	1,024	344		1,169		145	
100-42210-142	Unemployment Benefits	FIRE ADMIN	22	-	275	168	-	300	-		300		0	

100-42210-150	Workers Comp Premium	FIRE ADMIN	7,137	7,947	8,225	8,398	8,543	9,000	3,466		9,000	0	Estimate
100-42210-200	Office Supplies	FIRE ADMIN	131	241	560	-	1,095	350	79		350	0	
100-42210-305	Medical / Dental Fees	FIRE ADMIN	4,735	4,567	2,644	2,497	577	4,000	577		8,500	4,500	2021 Added Yearly FF Physicals
100-42210-306	Dues & Subscriptions	FIRE ADMIN	572	605	1,889	989	1,010	1,000	1,627		1,000	0	
100-42210-361	General Liability Insurance	FIRE ADMIN	2,370	4,743	5,248	3,973	3,548	5,000	1,512		5,000	0	Estimate
	Total Fire Admin		**45,125**	**52,140**	**67,816**	**85,426**	**67,890**	**95,651**	**7,261**	**8%**	**110,916**	**16%**	**15,265**
100-42220-221	Equipment Parts	FIRE EQUIP	1,056	2,791	6,579	4,850	1,650	11,500	2,778		6,000	(5,500)	
100-42220-228	Medical Supplies	FIRE EQUIP	782	370	-	1,170	1,331	1,500	241		1,500	0	
100-42220-240	Small Tools/Equipment	FIRE EQUIP	-	537	-	397	113	1,000	29		1,000	0	
100-42220-260	Uniforms	FIRE EQUIP	10,864	7,559	12,699	16,285	15,756	28,500	640		28,500	0	
100-42220-580	Other Equipment	FIRE EQUIP	856	1,081	730	5,081	3,799	5,000	44		5,000	0	
	Total Fire Equip		**13,557**	**12,338**	**20,009**	**27,783**	**22,649**	**47,500**	**3,732**	**8%**	**42,000**	**-12%**	**(5,500)**
100-42240-208	Training & Instruction	FIRE TRG	8,869	4,162	6,078	4,869	7,007	7,500	588		7,500	0	
100-42240-310	Other Professional Services	FIRE TRG	-	2,939	3,055	3,168	3,267	3,380	1,716		3,700	320	Contracted Renewal Cost
100-42240-331	Travel Expenses	FIRE TRG	792	2,137	3,754	1,397	1,580	1,500	-		1,500	0	
	Total Fire Trg		**9,661**	**9,238**	**12,886**	**9,434**	**11,854**	**12,380**	**2,304**	**19%**	**12,700**	**3%**	**320**
100-42260-212	Motor Fuels	FIRE VEHICLE	3,146	2,362	2,302	3,164	2,149	3,000	408		3,000	0	
100-42260-220	Repair/Maintenance Supply	FIRE VEHICLE	7,855	11,402	9,144	3,954	3,586	9,000	1,382		6,000	(3,000)	
100-42260-240	Small Tools/Equipment	FIRE VEHICLE	198	322	25	169	-	1,000	-		1,000	0	
100-42260-323	Radio Units	FIRE VEHICLE	5,035	8,481	3,439	11,145	6,516	7,800	37		8,000	200	
	Total Fire Vehicle		**16,235**	**22,567**	**14,911**	**18,432**	**12,251**	**20,800**	**1,827**	**9%**	**18,000**	**-13%**	**(2,800)**
100-42280-215	Shop Supplies	FIRE BLDG	189	416	177	617	508	800	-		800	0	
100-42280-220	Repair/Maintenance Supply	FIRE BLDG	14,969	2,827	1,364	9,717	2,737	7,500	989		6,500	(1,000)	
100-42280-321	Telephone	FIRE BLDG	351	371	1,857	1,050	1,076	1,000	412		1,500	500	
100-42280-325	Taxes	FIRE BLDG	-	-		-	-	-	-		-	0	
100-42280-381	Electric Utilities	FIRE BLDG	3,636	3,861	3,859	4,178	3,740	4,500	1,204		4,500	0	
100-42280-383	Gas Utilities	FIRE BLDG	2,855	1,935	2,298	3,369	2,891	3,500	1,211		3,500	0	
100-42280-520	Buildings & Structures	FIRE BLDG				932	-	-	5,270		-	0	KERI Card System
	Total Fire Bldg		**21,999**	**9,410**	**9,555**	**19,864**	**10,952**	**17,300**	**9,085**	**53%**	**16,800**	**-3%**	**(500)**
100-42290-124	State Aid Pensions	FRA	42,415	38,746	37,428	39,020	41,187	39,000	4,000		41,000	2,000	Pass Thru Fund
100-42290-125	Other Retirement Contributions	FRA	-	11,134	11,134	12,011	11,602	12,096	-		12,768	672	31% of Two Year's Prior State Aid Amount
100-42290-301	Auditing & Accounting	FRA	6,580	6,100	6,200	6,250	6,250	6,250	-		6,250	0	Billed Hourly, This is Estimated
	Total FRA		**48,995**	**55,980**	**54,762**	**57,281**	**59,039**	**57,346**	**4,000**	**7%**	**60,018**	**5%**	**2,672**
100-42401-310	Other Professional Services	BLDG INSP	53,391	54,669	39,212	38,238	37,436	40,000	10,110		40,000	0	
	Total Bldg Insp		**53,391**	**54,669**	**39,212**	**38,238**	**37,436**	**40,000**	**10,110**	**25%**	**40,000**	**0%**	**-**
100-42700-310	Other Professional Services	ANIMAL CTRL	185	250	577	1,070	457	1,000	250		500	(500)	
	Total Animal Ctrl		**185**	**250**	**577**	**1,070**	**457**	**1,000**	**250**	**25%**	**500**	**-50%**	**(500)**
100-42800-310	Other Professional Services	CEMETERY	50	2,174	-	-	-		-		-	0	
	Total Cemetery		**50**	**2,174**	**-**	**-**	**-**	**-**	**-**	**#DIV/0!**	**-**	**#DIV/0!**	**-**
	Total Public Safety		**374,432**	**389,338**	**404,167**	**448,795**	**416,225**	**490,903**	**107,414**	**22%**	**509,256**	**4%**	**18,353**
Public Works													
100-43000-101	Full-Time Wages - Reg	PUBLIC WORKS	98,608	107,097	111,190	150,035	157,705	146,116	56,279		155,372	9,256	3 FTE - With $10k Paid from Storm H2O
100-43000-102	Full-Time Wages - OT	PUBLIC WORKS	604	1,386	526	701	1,064	2,000	-		-	(2,000)	
100-43000-103	Part-Time Wages	PUBLIC WORKS	5,170	13,080	11,292	11,811	13,035	28,360	963		28,360	0	2 Summer Help and 1 Temp. Snow Plow Driver
100-43000-121	PERA	PUBLIC WORKS	7,730	8,095	8,059	11,248	11,857	12,834	4,552		12,403	(431)	
100-43000-122	FICA	PUBLIC WORKS	6,637	7,482	7,411	9,649	10,236	11,775	3,787		11,419	(356)	
100-43000-123	Medicare	PUBLIC WORKS	1,552	1,750	1,733	2,257	2,394	2,892	886		2,809	(83)	
100-43000-134	Employer Paid Life	PUBLIC WORKS	1,729	1,862	1,374	2,390	1,462	1,548	578		1,619	71	Estimate: Life + LTD/STD
100-43000-142	Unemployment Benefits	PUBLIC WORKS	264	28	1,865	7,058	-	-	-		-	0	
100-43000-151	Health Insurance Premiums	PUBLIC WORKS	15,616	19,200	20,701	31,625	31,776	32,400	11,298		28,800	(3,600)	1 Family & 2 Single
100-43000-208	Training & Instruction	PUBLIC WORKS	997	1,379	166	2,456	2,115	3,500	1,999		3,500	0	
100-43000-212	Motor Fuels	PUBLIC WORKS	-	5,218	5,085	11,874	11,839	12,000	2,856		12,000	0	Fuel, Gas, Petroleum Tax
100-43000-215	Shop Supplies	PUBLIC WORKS	-	2,658	3,524	7,989	4,233	7,500	1,560		7,500	0	
100-43000-220	Repair/Maintenance Supply	PUBLIC WORKS	378	11,725	7,134	15,044	10,935	12,000	2,203		12,000	0	
100-43000-226	Sign Repair Materials	PUBLIC WORKS	-	1,252	943	377	645	1,500	66		1,500	0	
100-43000-240	Small Tools/Equipment	PUBLIC WORKS	-	2,576	6,505	3,925	3,676	10,000	530		10,000	0	

100-43000-260	Uniforms	PUBLIC WORKS	-	1,316	2,225	2,266	2,865	3,000	-		3,000		0	
100-43000-310	Other Professional Services	PUBLIC WORKS	-	18,696	13,075	5,455	6,115	7,500	3,865		7,500		0	Compost Contract & Fire System Monitoring
100-43000-321	Telephone	PUBLIC WORKS	1,929	1,880	2,820	3,185	6,809	4,200	2,659		5,000		800	Cell Phones, Comcast + Digium
100-43000-325	Taxes	PUBLIC WORKS		120	38	118	20	200	135		200		0	Vehicle / Trailer Tabs
100-43000-381	Electric Utilities	PUBLIC WORKS					4,798	4,000	1,686		5,000		1,000	
100-43000-383	Gas Utilities	PUBLIC WORKS					5,249	7,000	2,454		7,000		0	
100-43000-520	Buildings & Structures	PUBLIC WORKS					1,640	2,000	555		2,000		0	Crane Inspection
	Total Public Works		**152,107**	**206,800**	**205,666**	**279,465**	**290,466**	**312,325**	**98,910**	**32%**	**316,982**	**1%**	**4,657**	
100-43121-224	Street Maintenance Materials	PAVED STREETS	71,522	32,250	16,992	7,750	35,732	50,000	3,956		50,000		0	
	Total Paved Streets		**75,755**	**32,250**	**16,992**	**7,750**	**35,732**	**50,000**	**3,956**	**8%**	**50,000**	**0%**	**-**	
100-43122-224	Street Maintenance Materials	UNPAVED STREETS	10,403	11,179	12,639	6,505	7,138	15,000	-		15,000		0	
	Total Unpaved Streets		**10,403**	**11,179**	**12,639**	**6,505**	**7,138**	**15,000**	**-**	**0%**	**15,000**	**0%**	**-**	
100-43125-224	Street Maintenance Materials	SNOW/ICE	15,000	9,453	19,171	15,988	15,806	20,000	6,385		20,000		0	
	Total Snow/Ice		**15,000**	**9,453**	**19,171**	**15,988**	**15,806**	**20,000**	**6,385**	**32%**	**20,000**	**0%**	**-**	
100-43160-381	Electric Utilities	STREET LIGHTS	19,475	26,424	23,876	24,046	25,400	25,000	8,696		25,000		0	
	Total Street Lights		**19,475**	**26,424**	**23,876**	**24,046**	**25,400**	**25,000**	**8,696**	**35%**	**25,000**	**0%**	**-**	
100-43240-384	Refuse/Garbage Disposal	CITY CLEAN UP	1,784	2,073	-	3,448	2,675	3,000	-		3,000		0	Offest by Disposal Revenue
	Total City Clean Up		**1,784**	**2,073**	**-**	**3,448**	**2,675**	**3,000**	**-**	**0%**	**3,000**	**0%**	**-**	
100-43245-384	Refuse/Garbage Disposal	RECYCLING	36,112	37,745	38,298	40,446	41,642	44,000	17,791		44,000		0	Residential Recycling Service
	Total Recycling		**36,112**	**37,745**	**38,298**	**40,446**	**41,642**	**44,000**	**17,791**	**40%**	**44,000**	**0%**	**-**	
	Total Public Works		**341,883**	**325,925**	**316,643**	**377,647**	**418,858**	**469,325**	**135,737**	**29%**	**473,982**	**1%**	**4,657**	
Culture & Recreation														
100-45186-437	Senior Center Contribution	SENIOR CENTER	5,330	7,016	7,905	8,140	8,527	9,100	2,274		9,500		400	Provided by St. Michael
	Total Senior Center Contribution		**5,330**	**7,016**	**7,905**	**8,140**	**8,527**	**9,100**	**2,274**	**25%**	**9,500**	**4%**	**400**	
100-45200-212	Motor Fuels	PARKS	-	1,478	1,214	1,933	2,026	2,000	188		2,000		0	Lawn Mower, Kubota, Toolcat Fuel
100-45200-220	Repair/Maintenance Supply	PARKS	4,513	4,599	3,428	5,642	7,351	6,000	3,943		6,000		0	Mower Repairs, Park Equipment Maintenance
100-45200-225	Landscaping Materials	PARKS	2,625	4,356	4,638	3,701	3,392	8,000	-		8,000		0	Wood Chips, Seed, Soil, Fertilizer, etc.
100-45200-310	Other Professional Services	PARKS	-	6,280	6,500	6,800	7,000	-	-		-		0	FYCC Costs Moved to Gambling Fund
100-45200-381	Electric Utilities	PARKS	2,054	2,265	2,981	2,071	1,849	2,200	895		2,200		0	
100-45200-400	Repairs & Maintenance Contract	PARKS	2,249	1,939	112	-	-	-	-		-		0	
100-45200-440	Programs	PARKS	9,041	2,216	1,945	2,529	1,000	-	-		-		0	Moved to Gambling Fund
100-45200-580	Other Equipment	PARKS	7,190	7,606	4,070	4,188	5,903	8,000	362		5,000		(3,000)	Porta Potty Cleaning
	Total Parks		**27,852**	**30,739**	**24,887**	**26,865**	**28,522**	**26,200**	**5,388**	**21%**	**23,200**	**-11%**	**(3,000)**	
100-45500-437	Contribution & Operation	ROY SIMMS LIBRARY	5,250	10,428	11,240	10,638	10,863	11,600	4,655		16,200		4,600	$11K bond plus $5,174 operation
	Total Roy Simms Library		**5,250**	**10,428**	**11,240**	**10,638**	**10,863**	**11,600**	**4,655**	**40%**	**16,200**	**40%**	**4,600**	
	Total Culture & Rec		**38,432**	**48,183**	**44,032**	**45,643**	**47,912**	**46,900**	**12,318**	**26%**	**48,900**	**4%**	**2,000**	
Transfers Out														
100-49360-700	Transfer Out	GENERAL CAPITAL		250,000			-	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	PARKS CAPITAL		148,570			-	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	FIRE DEPT CAPITAL	52,300	31,000	74,151	45,814	73,811	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	HISTORICAL FUND					-	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	CITY HALL FUND		74,093			-	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	EQUIPMENT FUND	55,000				-	-	-		-		0	eliminated as an operating expense
100-49360-700	Transfer Out	STREET CAPITAL	369,000		150,000		204,357	-	-		-		0	eliminated as an operating expense
	Total Transfers Out		**476,300**	**503,663**	**224,151**	**45,814**	**278,168**	**-**	**-**	**#DIV/0!**	**-**	**#DIV/0!**	**-**	
Transit														
100-49800-310	Other Professional Services	TRANSIT		250	187	489	-	-	-		-		0	
	Total Transit		**-**	**250**	**187**	**489**	**-**	**-**	**-**	**#DIV/0!**	**-**	**#DIV/0!**	**-**	
	Total Fund Expend.		**1,704,187**	**1,744,728**	**1,459,964**	**1,411,633**	**1,656,428**	**1,556,532**	**442,861**	**28%**	**1,572,942**	**1%**	**16,409**	
	Total Revenue Over Expenditures		**(125,848)**	**(318,698)**	**58,456**	**106,787**	**(51,145)**	**3,000**	**(357,039)**	**-11903%**	**0**	**-100%**	**-**	

Fire Department Cost for Services Calculation

2021 Estimated Market Values	HC	WC	TOTAL	
City of Corcoran	$218,586,700		$218,586,700	24.34%
City of Greenfield	$156,433,100		$156,433,100	17.42%
City of Hanover	$89,610,800	$318,957,500	$408,568,300	45.49%
Rockford Township		$114,599,300	$114,599,300	12.76%
	$464,630,600	$433,556,800	$898,187,400	100.00%

Total Calls by Year	2015	2016	2017	2018	2019	Total	Average	
City of Corcoran	34	50	43	44	23	194	38.8	20.77%
City of Greenfield	12	42	24	19	17	114	22.8	12.21%
City of Hanover	73	103	82	138	126	522	104	55.89%
Rockford Township	28	22	13	22	19	104	20.8	11.13%
	147	217	162	223	185	934	186.80	100.00%

2021 Budget:	320,433.90	Total Budgeted Expenditures (General Fund, Bonds, Capital Transfer)
	(41,000.00)	State FRA Pension Contribution
	$279,433.90	**Amount to be allocated**

Payment from City is based on dividing the budget in half and then determining costs based on Market Value and Total Calls.

	MV %	MV Pymt.	CH %	CH Pymt.	Payment
City of Corcoran	24.34%	34,002.11	20.77%	29,020.44	63,022.55
City of Greenfield	17.42%	24,333.85	12.21%	17,053.25	41,387.09
City of Hanover	45.49%	63,554.57	55.89%	78,085.92	141,640.49
Rockford Township	12.76%	17,826.42	11.13%	15,557.35	33,383.77
	100.00%	139,716.95	100.00%	139,716.95	279,433.90
		139,716.95		139,716.95	

2020 Payment Per City:	
City of Corcoran	**$64,531.56**
City of Greenfield	**$39,850.94**
City of Hanover	**$133,107.35**
Rockford Township	**$34,487.05**
	$271,976.90

2021 Payment Per City:		% Change
City of Corcoran	**$63,022.55**	-2%
City of Greenfield	**$41,387.09**	4%
City of Hanover	**$141,640.49**	6%
Rockford Township	**$33,383.77**	-3%
	$279,433.90	

Capital Improvement Fund Levy Revenue

Fund No.	Account Description	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Budget	2021 Budget	% Change	Comments
401	General									
402	Parks			25,000	25,000	25,000	25,000	25,000		
403	Fire Department	24,000	30,000	104,151	60,000	101,045	60,000	60,000		approx. 50% pd by contract entities
404	Historical Projects									
407	TIF Redev. Dist #1									
408	8th St. Project									
411	Facilities			-						
417	Equipment	55,000	65,000	52,348	15,000	20,000	50,000	50,000		
418	Street Project	190,000	215,000	310,000	152,880	169,806	275,000	451,000		
	Total Revenue	**269,000**	**310,000**	**491,499**	**252,880**	**315,851**	**410,000**	**586,000**	**43%**	

City of Hanover
Debt Services

2011 GO Improvement Crossover Refunding Bond Fund

Acct No.	Account Description	2016 Actual	2017 Actual	2018 Actual	2019 Budget	2020 Budget	2021 Budget	% Change
Revenue Accounts								
314-31000	PROPERTY TAXES-CITY	125,400	124,490	134,080	132,803	136,146	139,357	
314-33410	MV CREDIT							
314-36100	SPECIAL ASSESSMENTS	62,387	43,450	41,318		35,000	25,538	
314-36210	INTEREST EARNINGS	5,559	5,717	7,474		6,000	0	
314-36215	INVESTMENT INCOME/LOSS	(270)	(2,168)	(2,777)		(2,000)	0	
314-39100	BOND PROCEEDS							
314-39200	TRANSFERS IN							
	Revenue Accounts	**193,076**	**171,489**	**180,096**	**132,803**	**175,146**	**164,895**	**-6%**
Expenditure Accounts								
314-47000-601	DS: PRINCIPAL	140,000	140,000	150,000	150,000	155,000	160,000	
314-47000-611	DS: INTEREST	20,775	17,975	15,175	12,025	8,275	4,400	
314-47000-620	DS: FISCAL AGENT FEES	495	495	495	495	495	495	
	BALANCING (Fund 309 residuals)							
	Total Expenditures	**161,270**	**158,470**	**165,670**	**162,520**	**163,770**	**164,895**	**1%**
	Total Revenue Over Expenditur	**31,806**	**13,019**	**14,426**	**(29,717)**	**11,376**	**0**	**-100%**

**Last payment made in 2021*

City of Hanover
Debt Services

2016 GO Public Works Building Bond

Acct No.	Account Description	2016 Budget	2017 Actual	2018 Actual	2019 Budget	2020 Budget	2021 Budget	% Change
Revenue Accounts								
315-31000	PROPERTY TAXES-CITY		110,036	105,236	109,636	108,510	107,384	
315-36210	INTEREST EARNINGS		358	581		450	0	
315-36215	INVESTMENT INCOME/LOSS		(175)	115		0	0	
315-39100	BOND PROCEEDS							
315-39200	TRANSFERS IN							
	Revenue Accounts	**$ -**	**$ 110,219**	**$ 105,932**	**$ 109,636**	**$ 108,960**	**$ 107,384**	**-1%**
Expenditure Accounts								
315-47000-601	DS: PRINCIPAL		0	60,000	60,000	65,000	65,000	
315-47000-611	DS: INTEREST		24,249	40,630	39,820	38,879	37,806	
315-47000-620	DS: FISCAL AGENT FEES			0	495	495	0	
	Total Expenditures	**$ -**	**$ 24,249**	**$ 100,630**	**$ 100,315**	**$ 104,374**	**$ 102,806**	**-2%**
	Total Revenue Over Expenditur	**$ -**	**$ 85,970**	**$ 5,302**	**$ 9,321**	**$ 4,586**	**$ 4,577**	**0%**

Total Debt Services Expenditures	**161,270**	**182,719**	**266,300**	**262,835**	**268,144**	**267,701**	**44%**
Total Debt Services Tax Revenues	125,400	234,526	239,316	242,439	244,655	246,741	**3%**
Total Debt Services Non-Tax Revenues	67,676	47,182	46,712	0	39,450	25,538	**-100%**

PRELIMINARY LEVY CERTIFIED

City of Hanover

Bond Register/Debt Levy Supplement

Bond Issues	Original Principal	Date Issued	Paid by Levy Dollars (Y/N)	Debt Levy per Issued Bond for Pay 2021	Reductions to Levied Amount	Certified Debt Levy 2021
GO Improvement Crossover Refunding	$1,225,000	2011	Y	$139,357	$0.00	$139,357
GO Bond Capital Improvement	$1,535,000	2016	Y	$107,384	$0.00	$107,384
Total	**$2,760,000**			**$288,294**	**$0.00**	**$288,294**

I hereby certify that the above schedule of bond levies to be spread on payable 2021 tax rolls agrees with your records and is true and correct. Copies of any resolutions which increase or reduce these levies are attached.

Dated this ___th day of September, 2020.

Brian Hagen, City Administrator

PRELIMINARY LEVY CERTIFIED

STATE of MINNESOTA
COUNTY of WRIGHT
CITY OF HANOVER

Return by: September 30, 2020
City Taxes Voted

To the Auditor of Wright County: I hereby certify that the Council for the City of Hanover, Counties of Wright and Hennepin, Minnesota, did at a meeting on September ____, 2020 levy the following amount to be raised by taxation for the City of Hanover for the payable year 2021.

2020 Final					**2021 Preliminary**			
2020 Budget Requirement	2020 LGA	2020 Other Resources	2020 Tax Levy	# Fund	2021 Budget Requirement	2021 LGA	2021 Other Resources	2021 Certified Levy
1,303,555	124,773	167,909	1,010,873	5 Rev	1,312,508	126,192	174,509	1,011,807
250,977	39,000	107,573	104,404	7 Fire Prot.	260,434	41,000	108,206	111,227
307,246		18,952	288,293	19 Debt Services	267,701		20,961	246,741
410,000		31,297	378,703	26 Capital Improv.	586,000		29,587	556,413
2,271,778	**163,773**	**325,731**	**1,782,274**	**Total**	**2,426,643**	**167,192**	**333,263**	**1,926,188**

Dated this ____th day of September, 2020

_____
Brian Hagen, City Administrator

PRELIMINARY LEVY CERTIFIED

STATE of MINNESOTA
COUNTY of WRIGHT
HANOVER EDA

Return by: September 30, 2020
District Taxes Voted

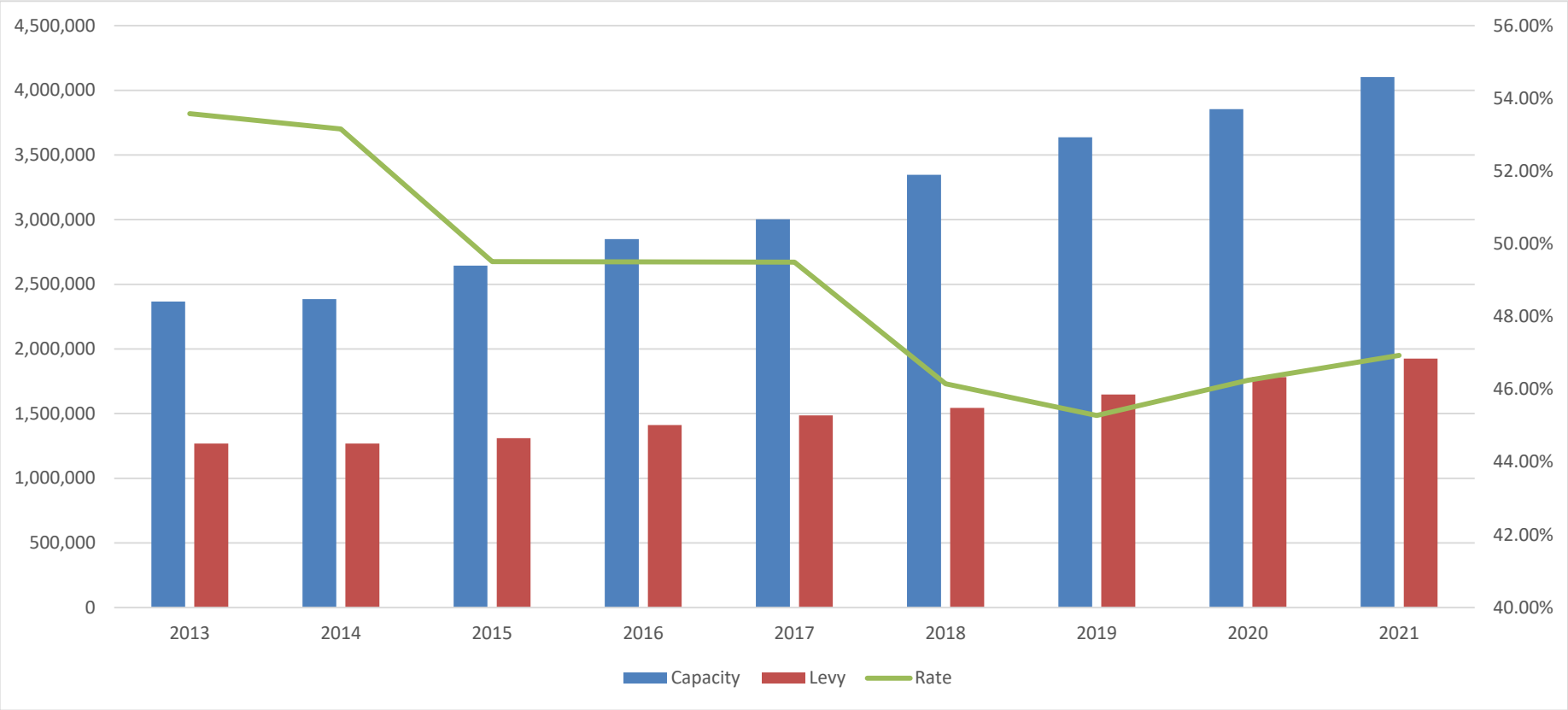
To the Auditor of Wright County: I hereby certify that the Hanover City Council, on behalf of the **Board for the Hanover EDA**, Counties of Wright and Hennepin, Minnesota, did at a meeting on September _____, 2020 levy the following amount to be raised by taxation for the City of Hanover for the payable year 2021.

2020 Final					**2021 Preliminary**			
2020 Budget Requirement	2020 LGA	2020 Other Resources	2020 Tax Levy	# Fund	2021 Budget Requirement	2021 LGA	2021 Other Resources	2021 Certified Levy
49,000			49,000	5 Administration	49,000			49,000
49,000	**0**	**0**	**49,000**	**Total**	**49,000**	**0**	**0**	**49,000**

Dated this _____th day of September, 2020.

_____
Brian Hagen, City Administrator

Preliminary Levy Certification	2013	2014	2015	2016	2017	2018	2019	2020	2021
Capacity	2,367,113	2,385,758	2,644,071	2,850,350	3,002,592	3,347,361	3,637,226	3,853,739	4,103,739
Levy	1,268,286	1,268,280	1,308,954	1,410,972	1,486,286	1,544,804	1,647,006	1,782,274	1,926,188
Rate	53.58%	53.16%	49.51%	49.50%	49.50%	46.15%	45.28%	46.25%	46.94%



Collaborative Planning, LLC

Memorandum

Date: August 26, 2020

To: Honorable Mayor and Council

From: Cindy Nash, AICP EDFP

RE: Amendment to Zoning Ordinance – Solar Energy Systems

The City Council asked the Planning Commission to review the solar ordinance again. They did this at their August meeting, and a revised solar ordinance is attached for your consideration.

Discussion questions for Monday's meeting are the following:

1. **Types of installations.** The draft ordinance would only permit building-integrated or building-mounted solar energy systems. These are proposed to be allowed as an accessory use in any zoning district. Building-mounted systems would only be eligible to be installed on principal buildings.

   Ground-mounted accessory systems or community solar gardens are not included in this ordinance and would not be permitted.

2. **Zoning Districts Permitted.** As drafted, these types of accessory structures would be a permitted accessory use in every zoning district (residential, industrial, commercial, and public/institutional and agricultural)

3. **Performance Standards.** The redlined draft contains additional performance standards to consider.

4. **Background Information on Solar Energy**. Attached is a document put out by the Clean Energy Resource Teams. CERTs is a partnership between University of Minnesota Extension, Great Plains Institute, the Southwest Regional Development Commission, and the Commerce Department and has a website with more information (www.cleanenergyresourceteams.org)

CITY OF HANOVER
COUNTIES OF WRIGHT AND HENNEPIN
STATE OF MINNESOTA

ORDINANCE NO. 2020-____

AN ORDINANCE AMENDING THE HANOVER ZONING ORDINANCE RELATED TO SOLAR ENERGY SYSTEMS

THE CITY COUNCIL OF THE CITY OF HANOVER, WRIGHT AND HENNEPIN COUNTY, MINNESOTA, DOES ORDAIN AS FOLLOWS:

Section 1. Amend section. Section 10.01 of the Hanover Zoning Ordinance is hereby amended to include the following definitions:

> *Building-integrated Solar Energy System.* "Building-integrated Solar Energy System" shall mean a Solar Energy System that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include but are not limited to photovoltaic or hot water systems that are contained within roofing materials, windows, walls, skylights, and awnings.
>
> *Building-mounted Solar Energy System.* "Building-mounted Solar Energy System" shall mean a Solar Energy System affixed to a principal building.
>
> *Solar Energy System.* "Solar Energy System" shall mean a complete design or assembly consisting of a solar energy collector, an energy storage facility (where used), and components to the distribution of transformed energy (to the extent they cannot be used jointly with a conventional energy system).

Section 2. Amend section. Section 10.25 of the Hanover Zoning Ordinance is hereby amended to add Building-integrated Solar Energy Systems and Building-mounted Solar Energy Systems as an accessory use to every zoning district.

Section 3. Amend section. Section 10.27 of the Hanover Zoning Ordinance is hereby amended to add Building-integrated Solar Energy Systems and Building-mounted Solar Energy Systems as an accessory use to every zoning district.

Section 4. New section. A new Section 10.74 is hereby added as follows:

SEC. 10.74 SOLAR ENERGY SYSTEMS

A. **Building-Integrated Solar Energy Systems**. In those districts that permit Building-Integrated Solar Energy Systems as an accessory use, the solar energy system shall be installed in a manner that is in compliance with all terms of this Ordinance including

height and setback restrictions of the zoning district in which it is proposed to be located. All solar energy systems shall meet the standards of the Minnesota Building Code, and a building permit shall be received prior to installation.

B. **Building-Mounted Solar Energy Systems**. In those districts that permit Building-Mounted Solar Energy Systems, they may be permitted subject to the following conditions:
   a. Building-Mounted Solar Energy Systems may be installed on the principal building only. No installation on accessory buildings is permitted.
   b. Building-mounted Solar Energy Systems shall be flush-mounted systems on a structure with a gable, hip or gambrel roof and shall not extend higher than six inches above the roof plane they are attached to. If installed on a flat roof, they shall not extend higher than ten (10) feet at maximum tilt above the surface of the roof and shall be placed outside the line of sight from a public right of way.
   c. A Building-Mounted Solar Energy System shall not exceed the maximum allowed height for the zoning district in which the system is located.
   d. The collector surface and mounting devices for each Building-Mounted Solar Energy System shall be set back from the edge of the roof of the structure upon which the system is located at least one foot. Exterior piping for a solar hot water system may extend beyond the perimeter of the building on a side or rear yard exposure.
   e. Solar energy equipment (i.e. boxes, wiring and conduit) shall be installed inside walls and attic spaces where feasible to reduce their visual impact. If solar equipment is visible from the public right of way, it shall match the color of the materials of the structure to which it is affixed.
   f. All solar energy systems shall meet the standards of the Minnesota Building Code, and a building permit shall be received prior to installation.
   g. All solar arrays or panels shall be installed or positioned so as not to cause any glare or reflective sunlight onto neighboring properties or structures. Staff may require a glare analysis that demonstrates compliance with this standard, as deemed necessary to protect the health, safety and welfare of the City.

C. Other types of solar system mounting are not permitted.

D. **Plan approval required**.
   a. No solar energy system may be installed without prior written approval by the Zoning Administrator.
   b. *Plan application.* A plan application for a solar energy system shall be accompanied by to-scale horizontal and vertical (elevation) drawings. The drawings must show the location of the system on the building for a roof mounted system.
      1. *Pitched roof-mounted solar energy system.* The drawings for a Building-Mounted Solar Energy System upon a pitched roof must show the elevation of the highest finished slope of the solar collector and the slope of the finished roof surface on which it is mounted.

2. *Flat roof-mounted solar energy system.* The drawings for a Building-Mounted Solar Energy System upon a flat roof must show the distance to the roof edge and any parapets on the building and shall identify the height of the building on the street frontage side, the shortest distance of the system from the street frontage edge of the building, and the highest finished height of the solar collector above the finished surface of the roof.
3. The Zoning Administrator may require the applicant to supply additional information that in their determination is needed to review the application for compliance with the Zoning Ordinance.

E. **Compliance with other codes***.* All solar energy systems shall comply with requirements imposed by the City Building Official and with requirements set forth in the Minnesota State Electrical Code.

F. **Utility notification***.* No solar energy system shall be installed until written evidence has been given to the Zoning Administrator establishing that the owner of the property upon which the system is located has notified the utility company of the intent to install an interconnected customer-owned generator. Off-grid systems are exempt from this requirement.

G. Solar Easements. It shall be the responsibility of the property owner to secure any solar energy easements, if applicable, to protect solar access for the system (per MN Statutes 500.30 as may be amended).

H. Abandonment. A Solar Energy System shall be considered abandoned after one year without energy production. A solar energy system and its related equipment shall be removed within 60 days after written notice by the City that the Solar Energy System has been deemed abandoned.

Section 5. Effective Date. This Ordinance shall be in force and effect upon adoption and publication in the official newspaper of the City in accordance with applicable law. The City may publish a summary of this Ordinance.

Section 6. Codification. City staff is directed to codify the revisions to the Zoning Ordinance as enacted in this Ordinance.

Passed and adopted by the City Council of the City of Hanover on the 1st day of September, 2020.

_____
Chris Kauffman, Mayor

ATTEST:

_____

Brian Hagen, City Administrator

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August 26, 2020

Solar Electricity
for the Home, Farm, and Business

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University of Minnesota Extension
Montana State University Extension
Western SARE Sustainable Agriculture Research & Education
University of Wyoming Extension

Steps in the Solar Electricity Series

1. Introduction
2. Building and Site Assessment
3. Conservation and Efficiency
4. System Components
5. System Sizing
6. Costs
7. Installation
8. Electricity Use Worksheet

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WILL SOLAR WORK FOR YOU?

Solar Electricity for the Home, Farm, and Business is a series of factsheets designed to help you determine if a solar electric system will work for you.

Overview of Steps:

1. **Introduction:** Basic educational information, myth busting, and orientation.
2. **Building & Site Assessment:** Building and site conditions to consider.
3. **Conservation & Efficiency:** Conserving and using energy more efficiently can reduce the system size and cost.
4. **System Components:** Provides detailed information about system options and components.
5. **System Sizing:** Proper sizing is important for a resource-efficient and cost-effective system. Includes a Panel and System Sizing Worksheet.
6. **Costs:** System costs depend on various factors. Rebates and incentives lower the cost.
7. **Installation:** Finding and hiring a contractor and considerations for operations and maintenance.
8. **Electricity Use Worksheet**

Thank you!

This series was adapted from the series, *E3A: Exploring Energy Efficiency & Alternatives*, specifically the section "Solar Electricity for the Home, Farm, and Ranch." Thanks to University of Wyoming Cooperative Extension Service, Montana State University Extension, and Western Sustainable Agriculture Research & Education (SARE) for making this publication available to University of Minnesota Extension. The full and original publication covering energy efficiency and more renewable energy technologies is available at http://www.e3a4u.info.

Thanks is also due to Minnesota technical reviewers Jack Kluempke, Brian Ross, and David Schmidt.

Questions?

If you have questions, please contact Dan Thiede at 612-626-0556 or thie0235@umn.edu, Lissa Pawlisch at 612-624-2293 or pawl0048@umn.edu, or Alexis Troschinetz at 612-626-0455 or atroschi@umn.edu.

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EXTENSION

E³A: Solar Electricity for the Home, Farm, and Business

By Susan Bilo, Sarah Hamlen, Mike Vogel, Milton Geiger. Updated by Lissa Pawlisch.

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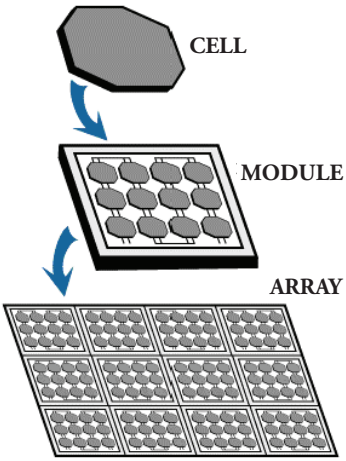
STEP 1: INTRODUCTION



Courtesy of NASA http://science.nasa.gov/science-news/science-at-nasa/2002/solarcells/

Minnesota's single largest source of electricity is coal-fired power plants. An alternative is to use the sun's energy as the fuel to produce electricity. This is accomplished using photovoltaic (PV) technology. The letters PV stand for "Photo" = light and "Voltaics" = electricity. PV technology can potentially be used anywhere the sun shines.

Solar electricity is produced through the PV Effect: when sunlight hits a solar cell, electrons are released and flow as electricity through wires to your building or equipment. Solar cells are connected together to form a panel (also called a module). Panels are wired together to form an array.

PV technology is used to power everything from calculators and outdoor lighting fixtures to buildings and satellites. Whatever is powered by electricity (appliances, machinery, etc.) is called the electrical "load." The sun can provide electricity for your home, greenhouse, and barn. It can also electrify fences and pump water.

In addition to the PV panels, a solar electric system (also called a PV system) includes an inverter, meter, and safety equipment. It may include batteries and a charge controller. These systems contain no moving parts, are silent, very durable and reliable, and are low maintenance. Once installed, they only use the sun's energy and their operation produces no emissions. Solar electric systems can produce all or a portion of the electricity that you need. PV panels can be added to an existing system over time.

System costs depend on a variety of factors. As a general rule of thumb, a grid-tied residential system without batteries costs between $4,000 and $7,000 per kilowatt (kW) of electricity produced. A 2014 study by the Lawrence Berkeley National Lab found the installed price of residential and commercial PV systems in Minnesota to be between $5,100 and $8,200 per kW. This includes installation costs. Utility rebates and government incentives can significantly reduce the final cost. A 2015 analysis by the Minnesota Department of Commerce found that the average installed costs of 2014 and 2015 Made in Minnesota approved systems (700 systems total) ranged from $4,700 to $6,100 per kW.

8.3 kW solar PV installation on a Oronoco, MN barn. Photo by Solar Connection Inc. Used with permission.

4 kW solar installation on Minneapolis, MN home. Photo by Rebecca Lundberg, Powerfully Green. Used with permission.

Dispelling the myths

The number one myth about solar in Minnesota is that it's just not sunny enough. Actually, Minnesota has a good solar resource, comparable to parts of Texas and Florida, that makes solar electric systems worth considering.

There is a myth that it takes more energy to make a PV system than it produces over its lifetime. "Energy payback" is the term used to describe the amount of energy it takes to develop/manufacture a system versus the amount of energy it generates. How long does a PV system have to operate to recover the energy that went into making it? The energy payback for rooftop PV systems ranges from 1 to 4 years depending on the type of PV panel. A properly designed, installed, and maintained system can produce energy for 30 years or more.

There is a myth that solar is simply too expensive for most people. This is no longer the case; solar prices have come down dramatically in recent years, making it more cometitive with other energy resources.

Why go solar?

People invest in solar electric systems for a variety of reasons: they want a clean, reliable source of electricity, they want independence from a utility company and/or electricity price increases, or they want to have a smaller environmental footprint. Investing in a system also helps support local renewable energy companies and their employees. Minnesota has and continues to build an infrastructure of qualified and certified companies and independent contractors who install and service solar electric systems.

Using this guide

You do not need to be an electrician or PV installer to understand how solar electricity systems work. These factsheets provide basic information that can help you decide if a solar electric system will work for you and help you discuss the topic knowledgeably with an installer. The sheets can be used separately or together for a step-by-step decision-making process.

1. **Introduction:** You are here!
2. **Building & Site Assessment:** Building and site conditions to consider.
3. **Conservation & Efficiency:** Conserving and using energy more efficiently can reduce the system size and cost.
4. **System Components:** Provides detailed information about system options and components.
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7. **Installation:** Finding and hiring a contractor and considerations for operations and maintenance.
8. **Electricity Use Worksheet**

30 kW solar PV installation in Minneapolis, MN. Photo by Sundial Solar. Used with permission.

Additional Resources

Barbose, Galen; Samantha Weaver; and Naïm Darghouth. (2014, September). *Tracking the Sun VII: The Installed Price of Photovoltaics in the United States from 1998 to 2013*, Figures 16 and 17. Retreived July 6, 2015 from http://emp.lbl.gov/sites/all/files/lbnl-6858e.pdf.

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U.S. Department of Energy. *Planning a Home Solar Electric System*. Retrieved September 29, 2015, from http://energy.gov/energysaver/planning-home-solar-electric-system.

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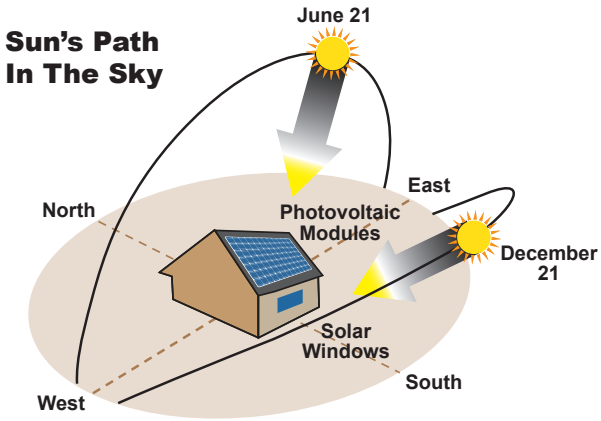
STEP 2: BUILDING & SITE ASSESSMENT

Answering these questions will help you determine if a solar electric system will work for your building or site.

1. Do you have a south-facing roof?

Because Minnesota is in the northern hemisphere, PV panels (modules) need to face south for maximum performance. This placement allows panels to take full advantage of the sun's path in the sky. The sun shines longest on a building's south side. Southeast- and southwest-facing panels will perform about 5 percent less efficiently.



- ☐ Yes! — Move to Question #2
- ☐ No — Options: PV panels can be used as structures such as porch covers or window awnings. They can also be ground-mounted or pole-mounted. If you cannot place PV panels to face south, a solar electric system will likely not be an efficient investment. You may choose to participate in a community solar garden (CSG), also known as a community shared solar (CSS) program if your utility offers one. Find out if your utility offers a CSG program at cleanenergyresourceteams.org/solargardens.

Panels can be mounted on east- or west-facing roofs to face south, but they stick up and are highly visible, and can be perceived by some as unattractive. Architects and builders can address this by designing "solar ready" buildings and integrating solar technology components into their designs. One can read more about these guidelines in "Solar Ready Building Design Guidelines for the Twin Cities, Minnesota."

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http://farmenergymedia.extension.org

2. Does your roof have enough space for PV panels?

There may be other technical considerations to comply with building codes, but the rule of thumb for PV panels is 100 square feet of space is needed for every kilowatt (kW) of electricity produced.

- ☐ Yes! — Move to Question #3
- ☐ No — Options: If your roof does not have enough space, review the Options section under the previous question.

Photo by Namaste Solar Electric NREL, 15620

3. Is your roof unshaded?

Photovoltaic panels are very sensitive to shading. Any shading will dramatically reduce electricity generation. Installers use a Solar Pathfinder device to determine if there are shading concerns from trees (consider mature height), chimneys, nearby buildings, etc. In Minnesota, people considering solar can enter their address into the Minnesota Solar Suitability App to get a sense for whether or not they may have a good solar site: http://mn.gov/solarapp. Keep in mind the sun's path changes throughout the year. For maximum electricity production, make sure panels will be unshaded year-round (especially from 9/10am until 3pm).

☐ Yes! — Move to Question #4

☐ No — Options: If the shade is from landscaping, consider removing the plants. Check local and state codes regarding "solar access" rights if a neighbor might produce shade on any solar system you are considering (MN statute 500.30). See the Pre-Installation section of Step 6: Installation. If some shade is inevitable, ask the installer about microinverters.

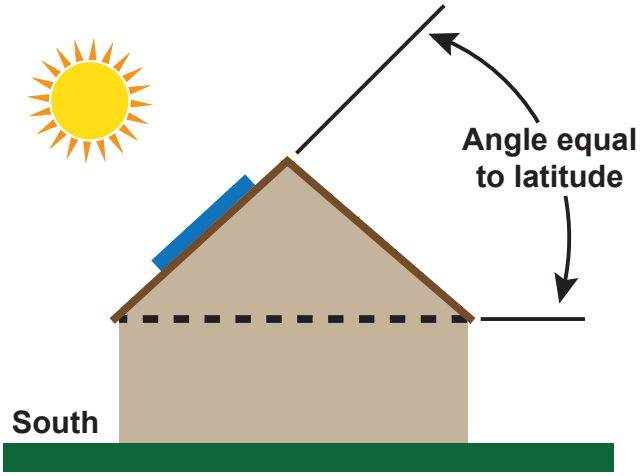
4. What is the angle of your roof?

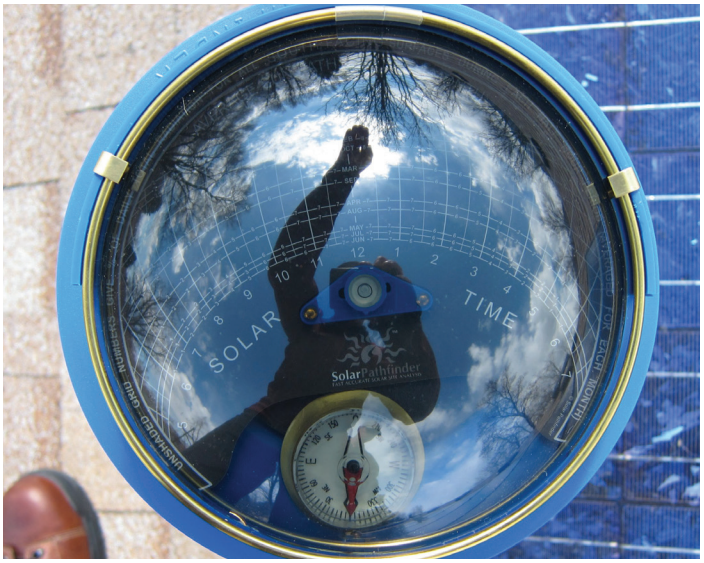
Installers typically mount panels directly (flush) on an existing south-facing roof for aesthetics. To maximize electricity generated year-round, mount modules at an angle equal to or close to your site's latitude (44 degrees for Rochester; 47.5 degrees for Bemidji). Installers can tilt at an angle best for your site, system type, and electricity needs.

For more summer electricity production, tilt at latitude minus 10 degrees to 15 degrees; for more winter production, tilt at latitude plus 15 degrees. As a rule of thumb, the ideal pitch for a PV system in Minnesota is between 35-38 degrees.

Flat Roofs: Panels can be angled on flat roofs (often found on commercial, industrial, and institutional buildings) using a racking system, but should not be placed flat (horizontal) because of snow build-up that will block the sun.

Solar Collection Orientation





Solar pathffinder. CC BY-NC-SA 2.0 Sam Ley
www.flickr.com/photos/phidauex/4436387544/

In Minnesota, people considering solar can enter their address into the Minnesota Solar Suitability App to get a sense for whether or not they may have a good solar site. The website offers detailed results for every square meter of the state at http://mn.gov/solarapp.

5. Is your roof in good condition?

Most roofs can safely support PV panels and mounting system weight. The rule of thumb is 2 to 5 pounds per square foot depending on the panel type and installation method. For example, a 230 watt crystalline panel (3.5 feet x 5.5 feet) weighs about 50 pounds. An installer should determine if the roof/structure can handle the added static weight. Innovative mounting systems can make panel removal easy, but because panels can last 30+ years, it may be less expensive and labor intensive to make needed roof repairs before installing panels.

☐ Yes! — Move to What's Next?

☐ No — Options: Complete any needed repairs first. If considering a new roof, contact a PV system installer/contractor for roof options/ recommendations that might make panel installation easier or less expensive.

What's Next?

If you answered yes to every question or can make adjustments where you answered no, your building or site is a good solar electric system candidate! A system supplier or installer can provide a more detailed assessment. Next, consider how conservation and efficiency measures can result in an efficient and affordable system; then, learn about system options.

Additional Resources

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Lunning Wende Associates. September 2010. "Solar Ready Building Design Guidelines." Downloaded on July 7, 2015 from https://mn.gov/commerce/energy/images/Solar-Ready-Building.pdf.

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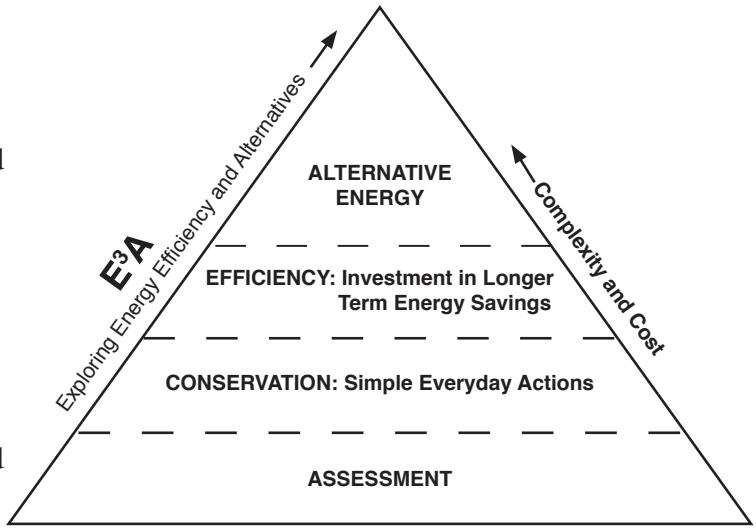
STEP 3: CONSERVATION & EFFICIENCY



Energy conservation and efficiency provide the foundation for a smaller, more efficient and affordable solar electric system.

It is easy to get excited about solar PV and other renewable energy technologies, but energy conservation and efficiency measures should be considered first. Why? Because when you or a contractor sizes your solar PV system, it is based on the amount of *electricity* you use. The less you use, the smaller, more efficient and affordable the system will be.

It is almost always cheaper to reduce energy use than to buy a larger renewable energy system. Replacing inefficient lights, appliances, equipment, and machinery can significantly reduce the size and cost of your solar PV system. Plus, the electricity savings continue for the life of the replacements.

You or a solar installer can review past utility bills to determine your electrical load in order to properly size your system. A Minnesota home's average electricity use is 800 kWh/month.

> **EXTRA:** If interested, use Step 7: Electricity Use Worksheet to make a list of everything that uses electricity and how much. This exercise will create an awareness of what will be powered by your PV system, how electricity use changes throughout a day, month, or a season, and will help you determine ways to reduce your electrical load. Alternatively, use a watt meter to measure and record electricity use in Step 7's worksheet. Many Minnesota libraries and utilities lend watt meters. The information can also be used for calculating your system size in Step 5: System Sizing.

According to the Minnesota Department of Commerce, Division of Energy Resource's Home Energy Guide (mncerts.org/home-energy-guide), the typical Minnesota home's total energy use (electric and thermal) is proportioned by the following uses: 55% for space heating and cooling, 15% for water heating, 15% for appliances, 10% for lighting, and 5% for electronics.

Space Heating and Cooling

The data above shows that by far home heating and cooling is the largest energy use in a Minnesota home. Even in homes that use natural gas for space heating, electricity is still used to power blowers and motors in a forced air system; depending on insulation

and air sealing levels, up to 40% of a winter electric bill can be attributed to the heating system. Also, in some parts of Minnesota, particularly Northwest Minnesota, over 30% of households have electric space heating. Conserving electricity associated with space heating means improving the building envelope, using a programmable thermostat, and maintaining heating and cooling equipment. The Home Energy Guide, referenced below, offers comprehensive information about these topics and specifically, air sealing, insulating, and improving windows and doors.

Water Heating

With water heating making up 15% of a home's total energy use, conserving hot water becomes a major means of reducing the home's electrical load when an electric water heater is used. See the Home Energy Guide for more infomation about water heating energy savings.

Appliances

Among appliances, the two largest users can be the refrigerator and the clothes dryer. The biggest way to cut on refrigeration costs is to reduce the number of units overall at the residence. Many homes have a second refrigerator or separate freezer. Simply using these appliances only when needed or eliminating one or more extra storage units can go a long way toward reducing a home's overall electricity use. When upgrading to a new refrigerator be sure to select an ENERGY STAR certified model. A new ENERGY STAR model could use a quarter of the energy used by a comparable refrigerator made 20 years ago.

In Minnesota, homes may have gas or electric clothes dryers. Similar to a natural gas forced air furnace, even a gas clothes dryer uses electricity to operate. People considering solar for their homes or businesses may choose electric dryers so that it is yet another appliance that can be accommodated by the on-site electricity generation. Clothes dryers can be ENERGY STAR rated as of 2015. ENERGY STAR models use 20% less energy than dryers not certified.

The Home Energy Guide offers many tips for maintaining refrigerators, clothes dryers, and other appliances for optimal energy efficiency, as well as what to look for when buying new, energy-efficient models.

Lighting

Whether for your home, farm, or business, upgrading to efficient lighting is one of the easiest ways to save money and reduce electricity use. Install ENERGY STAR light emitting diode (LED), compact fluorescent lamps/lights (CFL), or other energy efficient bulbs/tubes and Design Lights Consortium (DLC) certified fixtures. LEDs use 85 percent less energy and last 22 times longer than incandescent bulbs. They also produce 90 percent less heat than incandescent bulbs. This makes them safer to operate and can cut home or building cooling costs.

LEDs and CFLs cost more at the store, but they cost less to operate (the second price tag) and are cheaper overall. They will save you money when you are paying for electricity and may help reduce the number of PV panels needed for your solar electric system! Review the table at the top of the next page comparing a 10 watt LED and 60 watt incandescent. Both provide the same brightness (lumens).

Light Emitting Diode (LED) & Incandescent Bulb Cost and Energy Use Comparison

	LED	Incandescent
Equivalent Light Output Wattage	10 watts	60 watts
Bulb Cost	$8.00	$0.75
Bulb Lifespan	25,000 hours	1,000 hours
Bulb Cost for 25,000 Hours	$8.00	$0.75 x 25 = $18.75 (takes 25 bulbs to get 25,000 hours)
Energy Used in kWh	25,000 hours of light at 10 watts = 250,000 watt-hours. 250,000 ÷ 1,000 watts =250 kilowatt-hours (kWh)	25,000 hours of light at 60 watts = 1,500,000 watt-hours. 1,500,000 ÷ 1,000 watts =1,500 kilowatt-hours (kWh)
Utility Electricity Cost for 25,000 hours of light at $0.1235 / kWh	250 kWh x $0.1235 = $30.88	1,500 kWh x $0.1235 = $185.25
Store Purchase Cost + Electricity/ Operation Cost = Total Cost	$8.00 + $30.88 =$38.88	$18.75 + $185.25 =$207.50*

* *Add the "value" of the time it takes to replace burned-out incandescent bulbs 24 times.*

A more visual representation of the calculations above is provided in the graphic on the next page (only shown over a period of 20 years instead of the life of a LED bulb). This graphic is borrowed from the Clean Energy Resource Teams' Right Light Guide (mncerts.org/lighting/guide). LEDs can replace incandescent bulbs for most of a building's lighting

Cost Over 20 Years	Bulb(s) Energy	Pros (+) and Cons (-)
LED	1 bulb in 20 years **$35 total cost**	+ Saves 85% of energy use over incandescent + Lasts 25 times longer than incandescent + Great for dimmed, recessed, or enclosed fixtures + Performs well in cold temperatures - Higher bulb cost
CFL	3 bulbs in 20 years **$54 total cost**	+ Saves 75% of energy use over incandescent + Lasts 10 times longer than incandescent - Recessed & enclosed fixtures reduce bulb life - Performs poorly in cold temperatures - Contains mercury (recycling required)
Incandescent	22 bulbs in 20 years **Bulb & Replacement Cost** / **Energy Cost** **$284 total cost**	

Note: Cost comparison is based on a 20-year life and takes into account power consumption, hours of use per day, residential electric cost, bulb cost, and replacement cost. For detailed cost calculations and a full pro/con list, visit http://Lighting.MnCERTs.org.

needs. Larger, agricultural-based buildings can be retrofitted to use LED, or T-8 or T-5 fluorescent tube lighting.

With all the new technology, lighting selection may seem more difficult. Different amounts of light are needed for different uses. The way the light appears in color is a matter of preference. Consumers will need to shift from thinking about lighting in terms of only watts and bulb type (i.e., 60 W incandescent) to considering brightness and light appearance instead to ensure satisfaction. Lumen is the measure of brightness. Higher lumen output produces brighter light. Color temperature in Kelvins (K) is the measure of light appearance. A warm, yellow light is described as 2,700-3,000 K (closely matching an incandescent) and a cool, blue light is described as 5,000-6,500 K.

Lighting conservation measures of course include turning-off lights when not needed and using natural daylight whenever possible, but can include so much more. The Home Energy Guide offers many tips for using the appropriate style of lighting (e.g., task lighting), timers, dimmer switches, and motion sensors. It also offers bulb selection and disposal guidance.

Electronics

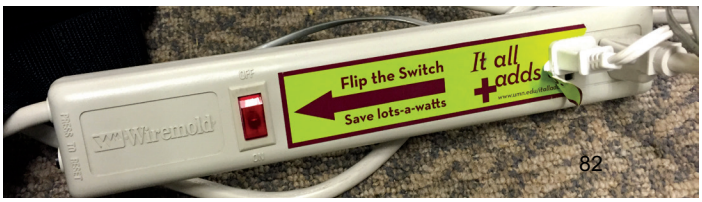
A 2010 study of residential plug-in devices in Minnesota suggests that consumer electronics, audio-visual entertainment, and portable space conditioning devices account for 15 to 25 percent of the total electrical load in Minnesota homes.

Note: Prioritize building envelope and space conditioning equipment improvements to minimize use of portable space conditioning devices like portable heaters and humidifiers.

Television, computer, and audio devices and their peripheral equipment (e.g., printers, DVRs) comprise 31, 21, and 5 percent, respectively, of the household total plug-in device electrical use. About 500 kWh per year could be saved through low-cost or no-cost measures, including 300 kWh per year of savings just from adjusting power management settings on desktop computers for maximum efficiency.

About 20 percent of a Minnesota household's total plug-in device electrical use can be attributed to standby power. Simply unplugging unused electronics, otherwise known as "energy vampires" or "phantom loads," can save as much as 10 percent on your electricity bill. Even though a cell phone charger uses only 0.26 watts on average when not charging, a cable box uses about 18 watts and one with DVR capabilities uses about 43 watts when the TV and these devices are "off." When the average American household has 25 consumer electronics, these phantom loads can add-up to a significant amount of an energy bill. When replacing electronics, choose ENERGY STAR devices, because they have lower standby power usage and generally lower energy use for all functions.

Understanding household plug-in loads can inform the electricity saving opportunities at businesses and farms, too. If a business is open 40 hours per week, then there are 128 non-business hours to drastically reduce standby power. In particular, households, businesses and farms can stay ahead of phantom loads by using smart power strips on TVs/computers and peripheral equipment and putting equipment like printers on timers.

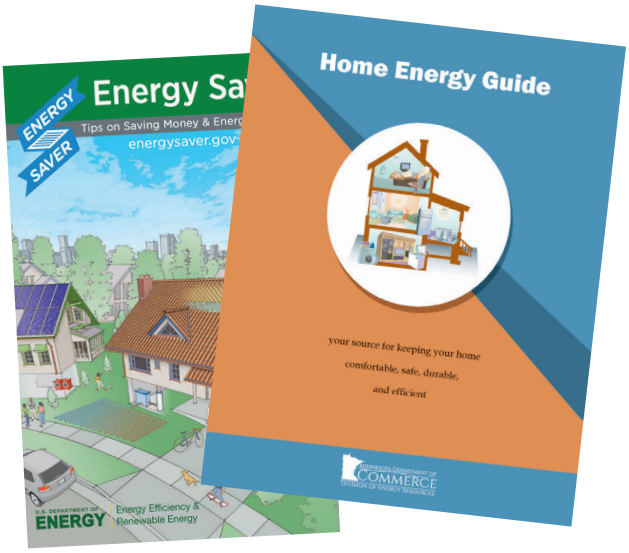


Additionally, farms can see up to 85% electricity savings by adding timers to tractor block heaters. The energy savings from running the engine block heater unnecessarily will usually pay for the timer in 1 to 3 months.

Other efficiency measures for the farm include modifying irrigation systems by switching from high- and medium- to low-pressure sprinkler systems and using variable speed drives for pumps, fans, and other equipment. A farm can reduce electricity use by as much as 35 percent with variable speed drives alone. If energy and water resources are a concern, planting crops with lower water requirements reduces water use and the electricity needed for pumping. Converting to drip irrigation or a linear/pivot system also saves both energy and water.

Key Themes

Conserve where you can and buy energy efficient fixtures, appliances, and machinery. Look for ENERGY STAR labels and compare the bright yellow EnergyGuide labels.



Resource Guides

The Minnesota Department of Commerce and U.S. Department of Energy have booklets with numerous tips on how to save money and energy.

- Home Energy Guide: your source for keeping your home comfortable, safe, durable, and efficient: http://mncerts.org/home-energy-guide
- Energy Saver: Tips on Saving Energy & Money at Home: http://energy.gov/articles/updated-energy-saver-guide-helps-you-save-energy-and-money-home
- CERTs Right Light Guide: Understand bulb types, brightness, color, and cost: http://mncerts.org/lighting/guide

Get an Energy Audit

If you hire a business to conduct an energy use assessment, select one that has trained and certified employees.

- BPI (Building Performance Institute) and RESNET (Residential Energy Services Network) are two certification programs for homes that use HERS (Home Energy Rating System).
- The Minnesota Building Performance Association is another great resource for finding qualified home energy auditors (www.mbpa.us/find-professional-location)
- RETAP (www.pca.state.mn.us/retap) and Energy Smart (mnenergysmart.com) are two programs in Minnesota that provide energy audits.
- You may be able to tap into your utility company for free or low-cost assessments, so be sure to inquire.
- Farms should hire someone who can perform an American Society of Agricultural and Biological Engineers Standard 612 type audit, preferably a Professional Engineer or Certified Energy Manager if the farm may want to pursue USDA funding, like Rural Energy for America Program (REAP - www.rd.usda.gov).

A blower door test measures the amount of leakage in a home during an energy audit.

Additional Resources

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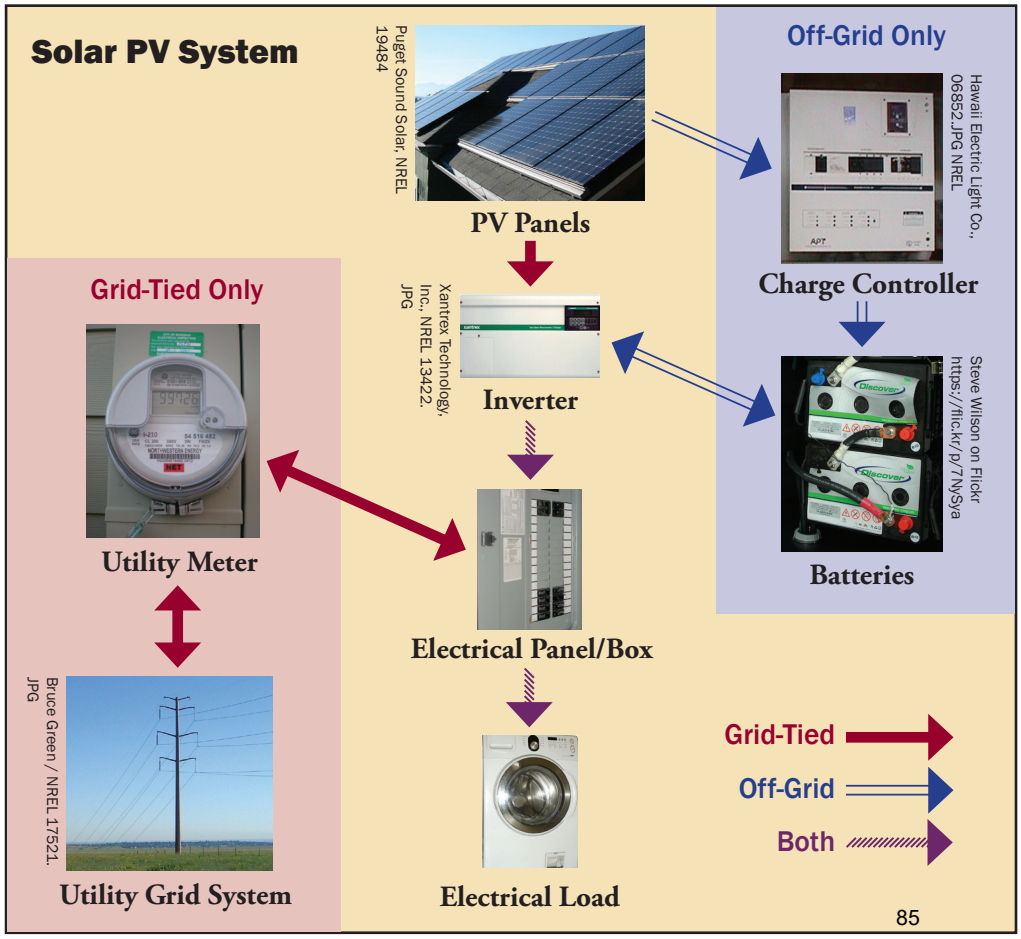
STEP 4: SYSTEM COMPONENTS

Solar Electric System Options

Each solar electric system is designed based on the electrical load, whether it is connected to the utility grid, and whether it includes batteries. The term "grid" refers to a utility company's system of transmission and distribution lines that carry and deliver electricity to your home, farm, or business. Grid-tied systems are connected to the utility power grid. They are also called grid-connected systems.

Grid-connected systems without batteries are currently the most common system type, and as such are the focus of this guide. PV panels produce electricity when the sun is shining during the day. At night, electricity comes from the utility grid. If during the day the building or equipment needs more electricity than the PV panels are producing, electricity is provided by the utility grid. If the PV panels are producing more electricity than needed, the extra electricity is fed into the utility grid. If there is a daytime power outage, the PV system automatically shuts down (does not supply electricity) for utility worker safety.

There are also off-grid systems that rely on batteries and multimodal systems that are battery and grid interactive. These are not the focus of this guide, but if you would like other resources please visit Home Power Magazine (homepower.com) or talk with your local installer about your other options.



Photovoltaic (PV) Materials

Photovoltaic (PV) materials are the electricity producing component of a solar electric system. PV materials are made of solar "cells." When the sun's light energy (not heat energy) hits and is absorbed by the cells, electrons are released and flow as electricity. The greater the amount and intensity of the sunlight, the more electricity generated. PV materials generate direct current (DC) electricity. Commercially available PV materials include crystalline silicon panels and thin-film materials that are both made in various sizes with various wattages of electrical output, though crystalline silicon panels are the most widely used in Minnesota.

Crystalline silicon flat-plate panels range in size and electrical output. They can be used for a variety of applications. Those typically placed on home rooftops range from about two-to-three feet wide by four-to-five feet long with a three-inch thickness. Electrical output ranges from 175 to 300 watts.

On partly cloudy days, PV materials will produce about 80 percent of their capacity. Extremely overcast days may reduce electricity output to 30 percent of capacity. PV materials are relatively unaffected by severe weather and temperatures, although like most electronic devices, they operate more efficiently at cooler temperatures. Because they are typically a dark color and face the sun at an angle, snow slides off or melts quickly. PV materials are designed to resist hail damage (one name-brand panel is tested to withstand one-inch hail at 51 mph). They typically come with a 25-year power output warranty, but most will produce electricity 30-plus years.

Tracking Systems

If your building does not have a south-facing roof or surface (or you cannot use PV on or as structures), panels can be ground-mounted or pole-mounted in a yard or field. Pole-mounted panels can be in a fixed south-facing position or placed on tracking devices. Like sunflowers, tracking devices follow the sun's skypath. A single-axis tracker follows the sun from east to west. A dual-axis tracker follows the sun from east to west and adjusts for seasonal sun angles. Trackers increase system cost, but can increase power production by 20 to 30 percent. Trackers also increase the number of moving parts on a system, and more moving parts can mean more maintenance. For the more hands-on homeowner or building manager, adjustable rooftop and ground mounting structures are available for making seasonal sun angle adjustments.

Photovoltaic Material Types	
Crystalline Silicon	**Single-Crystalline Silicon** Also called Monocrystalline • Made from a single, large silicon crystal • Most commonly used • 15-20%+ efficient: currently the most efficient material for converting sunlight into electricity • Costs more per watt than multi-crystalline; less than thin-film
Crystalline Silicon	**Multi-Crystalline Silicon** Also called Polycrystalline • Made from silicon blocks with many, small crystals • 10-15% efficient • Costs less per watt than single-crystalline and thin-film
Thin-Film	**Thin-Film Types** Amorphous silicon, and non-silicon materials such as Copper Indium Gallium Selenide (CIGS), and Cadmium Telluride • 6-10% efficient • Currently costs more per watt than both crystalline silicon types

PV Panel Performance

Manufacturers will provide a minimum warrantied power rating (in watts) that may be called peak power or peak tolerance rating. Many panels are tested under either Standard Test Conditions (STC) or PVUSA Test Conditions (PTC). The main difference is the testing temperatures. A PTC rating is deemed a more realistic rating. If the panels you are considering have a STC rating, actual performance may be 85-90 percent of stated wattage output. Be sure to also compare efficiency ratings.

System Performance

If you are sizing your own complete system, you can use the rated wattage output (referred to as nameplate DC rating) to estimate the number of panels you will need to meet your targeted electrical load. Actual output of electricity will depend on factors such as roof orientation, tilt angle, and overall system efficiencies. Because there are inefficiencies in the remaining components, multiply the PV panel nameplate DC rating by 77 percent (a conservative de-rate factor used in NREL's PV Watts on-line tool) for an estimate of the amount of electricity that will actually reach your electrical load. For example: a 230 watt DC Nameplate rating x .77 = approximately 177 watts of actual electrical power that will reach your electrical load.

Balance-of-System (BOS)

Balance-of-System (BOS) is a term that refers to the remaining components that accompany PV panels. BOS includes an inverter, meter(s), safety equipment (disconnect switches, etc.), and potentially batteries and a charge controller. It also includes conduit, cables, and combiner boxes.

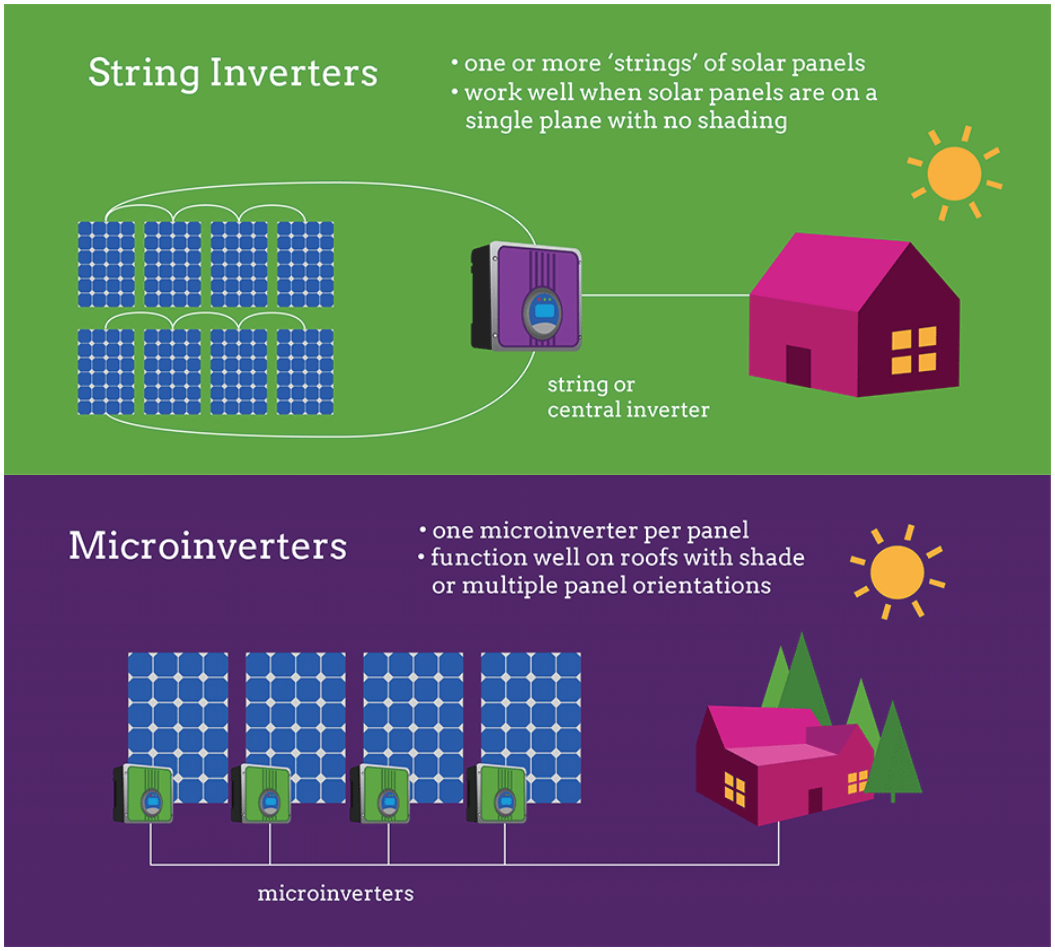
Inverter

An Inverter converts and conditions electricity. All PV materials/panels produce DC electricity, which can be used for DC-powered appliances, and camping and boating-related equipment, etc. Most appliances, electronics, and machinery require alternating current (AC) electricity, and an inverter converts the PV-generated DC into AC electricity. Inverters also "condition" the PV-generated electricity to match the qualities of the utility grid-produced electricity in order to properly power the electrical load.

There are two commonly used types of inverters: string inverters and microinverters. String inverters are the most widely used inverter system worldwide and are central inverters that serve entire PV systems. They work well when systems are sited for no shading. Microinverters work well where there might be potential panel shading, as they are attached to each individual PV panel instead of using a central inverter for the whole system. They are more expensive, but they can make system expansion easier and less expensive.

When it comes to installation, keep in mind that all grid-tied inverters must be Underwriter's Laboratories (UL)-certified. In addition, inverters should be accessible, weather-protected, and kept out of direct sun. Inverters can be up to 98 percent efficient and last up to 20 years. Warranties are typically for 10 years.

All solar electric system components must be matched to work together as a system. If you plan on adding more PV panels at a later date, consider either sizing your inverter for the future system or consider using microinverters. It may be less expensive to consider these alternatives at the beginning than it would be to upgrade to a larger inverter and the accompanying equipment changes that would also be required down the road.



Source: EnergySage, the online solar marketplace. Learn more at https://www.energysage.com/solar/101/string-inverters-microinverters-power-optimizers

Meters

Meters track the amount and "direction" of electrical flow in grid-tied systems (off-grid systems often have meters to track battery charge levels, etc.). When the sun is shining, the PV system generates electricity. If your building or machinery does not use all of the electricity being generated at any one time, it is fed into the utility's grid. When this occurs, you are credited at either a retail or wholesale rate from the utility. The retail rate is the rate you pay for electricity from the utility. The wholesale rate is a lower rate the utility pays for electricity it buys on the wholesale market.

How is electricity from a grid-tied system tracked? Typically, a special Net Meter, or bi-directional meter, is provided and installed by the utility company once a grid-tied system installation is completed. This digital meter "spins" forward when you are using electricity from the grid and "spins" backward when you are generating excess PV-generated electricity that is fed into the grid. If at the end of a month's billing period you used more electricity than your PV system generated, you are billed for the net amount you use. If your PV system generated more than you used, you receive a financial or energy (kWh) credit for the excess energy produced.

In some instances the utility company may also install a production meter to record the solar energy produced (not the net of production and usage). This is often used when the customer receives a production incentive payment so as to allow the utility to calculate the incentive amount.

All utilities in Minnesota are required to allow you to connect a net metering system <40 kW in size as long as you follow all of the standard interconnection procedures. In Xcel, Minnesota Power, and Otter Tail territory, customers can net meter systems up to 1 MW as long as the system does not exceed 120% of the onsite load. Your installer will be able to navigate this process with you. It is always a best practice to contact your utility company to ask for their current interconnection and net metering requirements.

Safety Equipment

Safety equipment protects owners, utility workers, and system equipment. Safety equipment includes AC and DC disconnect switches, grounding equipment, and surge protection. This equipment is very important for protecting people and system components from power surges, lightning strikes, ground faults, and equipment malfunctions. Automatic and manual disconnect switches are required in Minnesota. Disconnect switches shut down the system so it can be worked on safely whether for routine maintenance or repairs. Switches also prevent the system from sending power to the grid and endangering utility workers while they conduct repairs.

Systems with Batteries

Batteries store electricity. Off-grid buildings require batteries as part of the solar electric system. Electricity is stored and used from the battery bank, which is sized to provide electricity for the full electrical load for two or three days. Grid-tied buildings with battery back-up typically have a small battery bank used to store electricity for use during utility power outages.

When batteries are part of a solar electric system, a charge controller, also called a regulator, is required. It is connected between the PV panels and the batteries. A charge controller regulates and optimizes electrical flow from the panels to the batteries, keeps batteries fully charged, and prevents battery overcharging. It also prevents batteries from being excessively discharged, which can damage or ruin them. Charge controllers must be properly matched to the overall solar electric system for proper function. Charge controllers can be up to 98 percent efficient and are typically warrantied for up to five years.

Inverters and charge controllers can be combined into one piece of equipment. In this combined system the inverter converts solar-generated DC power (stored in the batteries) to AC so that it can be used by appliances.

Batteries can lower the overall efficiency of a solar electric system because they only release a percentage (80-95 percent) of the electricity that is fed into them. Batteries need periodic maintenance, and have safety considerations. They may last from seven to ten-plus years before requiring replacement. Their lifespan depends on factors such as number of discharges and the temperature at which they are stored.

Component and System Certifications

No matter what type of solar electric system you are installing make sure to purchase and use quality, certified components.

PV panels:

- Underwriter's Laboratory (UL) 1703 safety standard.
- Inverters and Charge Controllers: UL 1741.

Organizations that test and certify system components:

- Florida Solar Energy Center (FSEC): www.fsec.ucf.edu
- Go Solar California: www.gosolarcalifornia.org

Ground-mounted solar PV tracker system installation in Spicer, MN. CC BY-NC 2.0 Clean Energy Resource Teams www.flickr.com/photos/mncerts/sets/72157632241554770

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STEP 5: SYSTEM SIZING

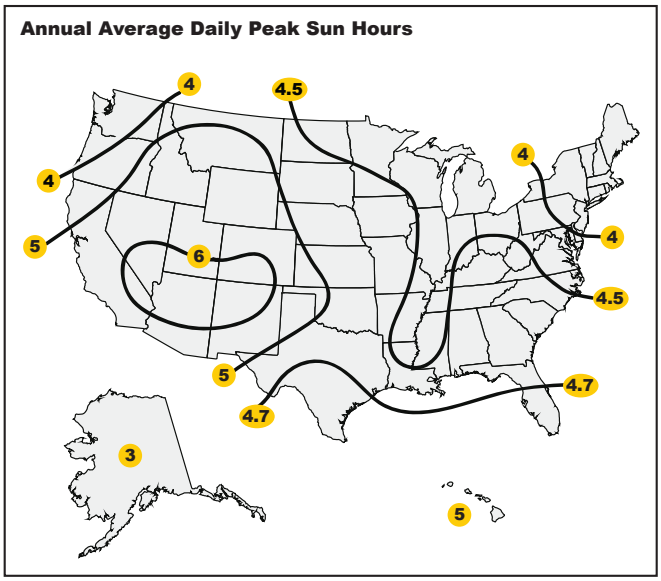
The size of your solar electric system depends on:

- How much electricity is used and the percentage of solar electricity to be generated
- Type of PV material used (crystalline silicon or thin-film)
- Roof or other PV material mounting surface orientation, tilt, area, and condition
- Local solar resource (solar radiation) and peak (direct) hours of sunlight
- Budget

You or a system installer can review your utility bills to determine how much electricity you use–typically shown in kilowatt-hours (kWh). If the information is not on your bill, contact your electricity provider and ask for your average monthly use in kWh.

One method for approximating system size is using **Daily Peak Sun Hours**:

1. Determine your average monthly electricity use in kWh
2. Divide by 30 for average use per day
3. Find the Peak Sun Hours for your location on the map; peak sun hours are the hours of direct sunlight that fall on a PV panel (not total hours of daylight)
4. Divide the answer calculated in #2 by your Peak Sun Hours; #4's answer is a rough estimate of the solar electric system size you will need (in kW) for 100% of your electricity



Example:

1. A Minnesota home's monthly average electricity use is 800 kWh/month
2. 800 kWh ÷ 30 = 26.67 kWh average per day
3. St. Paul is near the diagram's "4.5" line = 4.5 annual average peak sun hours per day
4. 26.67 ÷ 4.5 = 5.9 kW PV system would be needed to produce 100 percent of this home's electricity

NOTE: This method provides a rough estimate and should not be used to size a system. The actual system will most likely be larger due to many system-related factors.

For more accurate sizing, use the worksheet below. It takes conservation and efficiency

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measures and system component inefficiencies into account.

Solar Electric PV Panel/System Worksheet *Based on a South-Facing PV Module at a Fixed Tilt (Latitude Angle)*		
Steps	Example: Home in Saint Paul, Minnesota	Your Home/Building
1. Average monthly electricity used in kilowatt-hours (kWh).	800 kWh/month	
2. Multiply by 1,000 to convert to watt-hours used per month.	800 X 1,000 = 800,000 watt-hours/month	
3. Divide by 30 for total average watt-hours used per day.	800,000 ÷ 30 = 26,667 watt-hours/day	
4. Subtract daily watt-hours eliminated through energy conservation and efficiency.	26,667 – 2,667* = 24,000 watt-hours/day	
5. Multiply by the percent of electricity you want provided by the sun.**	For 50%: 24,000 X .50 = 12,000 watt-hours/day	
6. Divide by the average monthly solar radiation for your city or the city nearest you. Find in **Table A**. (on next page)	12,000 ÷ **4.5 kWh/m²/day** = 2,667 watts	
7. Multiply by 1.2 to account for system inefficiencies (wire losses, etc.)	2,667 X 1.2 = 3,200 watts	
8. Divide by 1,000 for the size of the overall system in kilowatts (kW). Will be used to approximate system cost.	3,200 ÷ 1,000 = **3.2 kW** PV array/ "system" size	
9. Divide #7's answer by the Peak/Max Power (in watts) of the PV panel you will install. (270 watts is a typical average)	3,200 watts ÷ 270 watts = 11.8 (12) panels	
10. Round up to a whole number. This is the number of PV panels needed to provide electricity based on the selected criteria.	**12**, 270-watt PV panels (12 x 270=3,240 watts) or **11**, 270-watt panels (11 x 270=2,970 watts)	

* Example of potential 10% energy savings in watt-hours/day. Re-run the calculation after you have implemented conservation and efficiency measures.
**Omit this step if you wish to provide 100 percent of electricity; carry value from #4 down to #6.

Worksheet Notes:

1. Minnesota homes use an average of 800 kWh/month of electricity.
2. 1 kilowatt-hour (kWh) = 1,000 watt-hours
3. 365 days/year divided by 12 months = 30 average days in one month.
4. Energy conservation and efficiency measures can reduce the size of your system. Estimate 10% savings can be accomplished before installing a system.
5. PV panels can be added to a system over time.
6. The solar radiation value used to rate panels is 1 kW/m2 and thus the results are in watts.
7. The amount of PV-produced electricity decreases as it flows through wires, the inverter, and other system components. NREL's PV Watts on-line tool addresses this using a de-rate factor.
8. Converts watts back to kilowatts (the units used to describe a system's "size").
9. If you know what PV panel you will use, divide Box 7's watts by the Peak Power (in watts) of the panel to determine the # of panels needed. Do you have enough space on your roof?

After the number of panels is determined, the remaining balance of system components (inverter, etc.) can be sized accordingly. While the kW output calculated in Step 8 above is specific to the PV panels/array, the kW number is also referred to/used as the "system size."

Find your city or city nearest your site for your average daily Solar Radiation (Solar Resource):

Table A: Solar Radiation for Flat-Plate Collectors/ Panels (south-facing, fixed tilt at latitude angle)

Minnesota Cities	kWh/m²/day
Duluth	5.0
International Falls	4.8
Minneapolis	4.7
Rochester	4.8
St. Cloud	4.7

Source: U.S. DOE/National Renewable Energy Laboratory (NREL): http://rredc.nrel.gov/solar/pubs/redbook/

Five Minnesota cities have National Solar Radiation Data Base collection stations. The NREL web link provides adjusted panel angles and tracking system data.

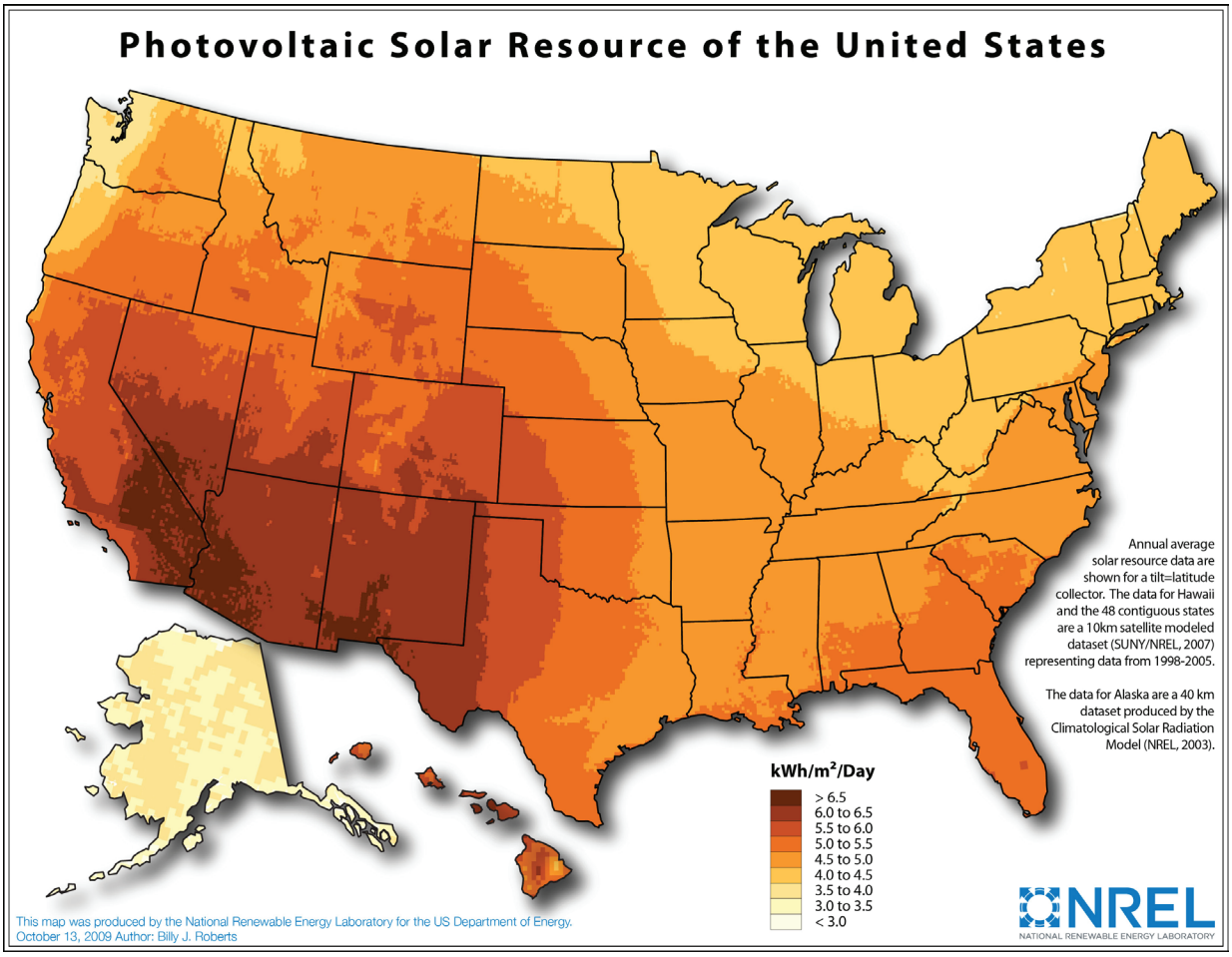
If your city is not listed in the table or is not near the listed cities, find your solar resource/radiation number from the map below. If printed/copied in black and white, access the map at http://www.nrel.gov/gis/solar.html.

Computer/On-Line Sizing Tools allow you to consider a combination of PV system options for specific locations using your address or zip code. Know how much electricity you use in one year (in kWh) and the approximate PV system size you are considering before you access the free programs described below.

- The Minnesota Solar Suitability App shows solar energy potential for every square meter of the state, provides basic system size and cost information, and helps you walk through next steps: http://mn.gov/solarapp
- PV Watts is an on-line calculator that provides energy production and cost savings estimates for grid-tied systems: pvwatts.nrel.gov
- My Solar Estimator estimates solar electric as well as wind and solar hot water system sizes: www.solar-estimate.org

Whether you use pencil and paper or a computer, these exercises provide a sense of what system size will work for you. A consultant or installer can provide a more detailed analysis and can advise on what will work best for your particular needs.

Are you interested in solar electricity because you want to reduce your environmental footprint? To determine the amount of greenhouse gases you are not emitting into the atmosphere by installing a solar electric system, use Option 1 (insert the kWh provided by the solar electric system) with the U.S. EPA's Greenhouse Calculator: www.epa.gov/cleanenergy/energy-resources/calculator.html.



Courtesy of NREL, http://www.nrel.gov/gis/solar.html / www.nrel.gov/gis/images/solar/national_photovoltaic_2009-01.jpg 92

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STEP 6: COSTS

As a general rule of thumb, an installed, grid-tied residential solar electric system without batteries costs approximately $4,000 to $7,000 per kilowatt (kW). Using watt units, $4 to $7 per watt. Larger systems typically cost less per installed kilowatt. An "installed kW" price includes the purchase and installation costs. Using the Saint Paul home system sizing worksheet example from Step 4 on System Sizing, a 3.2 kW system that provides 50 percent of the home's electricity would cost about $16,500. (3.2 kW x $5,500 = $16,500).

Note: Be prepared to pay or finance the full purchase price because some incentives that lower the final cost are received after the system is installed.

Incentives that Lower Costs

There are a variety of federal, state, and utility incentives for energy efficiency and renewable energy. These incentives vary by state and in the length of time they are available. The Department of Energy's Database of State Incentives for Renewables and Efficiency (DSIRE) — http://dsireusa.org — keeps track of tax credits, rebates and other incentives available to reduce your system's final cost.

Estimating Cost Savings and Simple Payback for a Net-Metered System

First, calculate the yearly cost savings of your PV system using the formula: (PV system size) x (Energy Production Factor) x (Electricity Rate) = $/year saved

For the St. Paul example:

- PV system size: 3.2 kW
- Energy Production Factor: 4.6 kWh/m2/Day (find in Step 4: System Sizing's Table A: Minneapolis' (Year) average or the NREL map, both on Page 3) x 365 days/year = 1,679 kWh/kW-year
- Electricity (utility) Rate: $0.10 per kWh

3.2 kW x 1,679 kWh/kW-year x $0.10/kWh = $ 537 saved per year

Simple Payback is calculated by dividing the system price by the amount saved per year. Examples below use the Saint Paul home numbers.

Without Incentives: Cost $16,500 ÷ $537 saved per year = 31-year simple payback

Many solar systems will be eligible for various incentives that can shorten this payback period.

First, apply utility-specific Rebates. Several Minnesota utilities offer solar energy rebates (Austin, Brainerd, Marshall, Minnesota Power, Moorhead, New Ulm, Owatonna, Rochester, Shakopee). See an up-to-date list of current utility-specific solar rebates and the program details at: www.dsireusa.org. Any customer served by a utility with a current rebate should contact the utility directly for eligibility and availability for the rebate program.

Second, apply any available Federal incentives. Solar projects are eligible for an Income Tax Credit of 30 percent of system cost (after utility/local rebates) through December 31, 2019 (starting January 1, 2020 incentive amounts will step down).

$16,500 x 30 percent = $4,950 tax credit. Therefore, $16,500-$4,950 = $11,500.

System Final (Net) Cost: $11,500 ÷ $537 saved per year = 21-year simple payback.

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With Production Incentives

- Minnesota's largest utility, Xcel Energy no longer offers a solar energy rebate, but rather a production incentive (which does not need to be applied before the tax credit). You can learn more about this Solar*Rewards program at http://mncerts.org/solarrewards.
- In addition, customers of Xcel Energy, Minnesota Power, and Otter Tail Power are all eligible for the Made-in-Minnesota production incentive program. The production incentives are allocated via a lottery system, with roughly half of the available incentive dollars allocated to residential customers and the other half allocated to commercial customers. The program has $15 million available per year for each of 10 years until 2023. Incentive amounts vary by manufacturer, and at present there are four eligible manufacturers: tenKsolar, Silicon Energy, itek Energy, and Heliene. Read more about the program and stay up to date on incentive amounts at the Minnesota Department of Commerce site: mn.gov/commerce/industries/energy/solar/mim.

For example, our 3.2 kW system that produced 1,679 kWh/kW-year would receive an additional 0.25/kWh produced if installed a Heliene system and received a Made-in-Minnesota incentive through the lottery. That would amount to:

3.2 kW * 1,679 kWh/kW-year * $0.25/kWh = $1,343.20 saved per year.

The Made-in-Minnesota incentives are in addition to the $537 / year saved on your utility bill. In total your simple payback would now be:

System cost: $16,500 ÷ ($537+$1,343.20) saved per year = 8.77 simple payback (the MiM incentive only last for 10 years).

NOTE: Payback times decrease when electricity costs increase. Some conservation and efficiency measures (that can reduce PV system size) also qualify for a tax credit. Visit the DSIRE website for complete and up-to-date information: http://dsireusa.org.

PV System Financing

There are a variety of financing options for solar electric systems:

- Center for Energy and Environment (CEE) Solar Financing: www.mncee.org/Find-Programs/Solar/
- Neighborhood Energy Connection (NEC) Solar Financing: thenec.org/home-and-energy-loans
- USDA Rural Energy for America Program (REAP): www.rd.usda.gov
- Bank Loan
- Home refinance — roll into a mortgage payment
- Construction loan
- Home equity loan
- Minnesota Housing Finance Agency Fix-Up Fund (allows for solar). See program details and eligibility: http://bit.ly/mnhousingfixup
- Some PV system companies provide financing
- For businesses, Property Assessed Clean Energy (PACE) financing is also an option. Learn more here: http://mncerts.org/pace

4 kW solar PV installation on a Edina, MN home. Photo by Karl Schwingel, Innovative Power Systems. Used with permission.

Additional Resources

Department of Energy's Database of State Incentives for Renewables and Efficiency (DSIRE). (2011, February). *Residential Renewable Energy Tax Credit*; Residential Alternative Energy System Tax Credit; and Northwestern Energy-USB Renewable Energy Fund. Retrieved May 19, 2011 from http://dsireusa.org/incentives/index.cfm?getRE=1?re=undefined&ee=1&spv=0&st=0&srp=1&state=MT

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Solarbuzz: Solar Market Research and Analysis. (2011). *Solar Electricity Prices*. Retrieved April 11, 2011, from http://www.solarbuzz.com/facts-and-figures/retail-price-environment/solar-electricity-prices

U.S. Dept. of Energy. (2011, Feb.). *Estimating Energy Cost Savings for a Net-Metered Photovoltaic System*. Retrieved March 11, 2011, from http://www.energysavers.gov/your_home/electricity/index.cfm/mytopic=10860

E³A: Solar Electricity for the Home, Farm, and Business

By Susan Bilo, Sarah Hamlen, Mike Vogel, Milton Geiger. Updated by Lissa Pawlisch.

Steps in the Solar Electricity Series

1. Introduction
2. Building and Site Assessment
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5. System Sizing
6. Costs
7. **Installation**
8. Electricity Use Worksheet

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STEP 7: INSTALLATION

Pre-Installation Considerations

Before installing a solar electric system, your solar installer will check local building codes, subdivision covenants, and zoning ordinances or regulations and any private easements. They will also contact your local electrical or building inspector to determine requirements. The National Electric Code (NEC) Article 690 provides requirements for designing and installing a safe, reliable and code-compliant solar electric system. Using NEC criteria will ensure local code official approval. Check whether a building permit is required if installing a system on an existing building.

Review the covenants and contact the homeowner's association (HOA) board or the management company if you live in an area with a homeowner's association. You may need to educate local building code officials and local representatives if you are the first in your area to install a renewable energy system. Contact your utility company to see what it requires to interconnect your system. Systems in Minnesota will need to comply with a series of inverter safety requirements developed by Underwriter's Laboratory (UL 1741).

Other installation issues might include: historic district guidelines and/or restrictions and future shading. Will any trees on your property or nearby property grow and shade the system panels? Be sure to communicate with neighbors about your plans and determine if they might plant trees or add a second story to a home that may shade your panels. Some government jurisdictions have solar access zoning regulations that prevent the blocking of the sun required for operation of any solar energy system. Minnesota law (Minnesota Statute 500.30) allows the creation of easements to protect solar and wind energy rights. This requires negotiation with neighboring property owners.

9 kW of solar installed in 2009 & 2012 on a Blaine, MN home. Photo by Sam Villella. Used with permission. 96

24.5 kW solar PV installation on a Welch, MN farm. Photo by Solar Connection Inc. Used with permission.

Who Will Install Your System?

Proper installation of your solar electric system will ensure maximum electrical output. Hiring a qualified company or contractor is recommended because proper installation entails numerous considerations and requires attention to safety (roof work, electrical hook-ups, etc.). Some manufacturers will extend a system's warranty if installed by one of their trained contractors. Some utility rebates will only be given if a system is installed by a trained and certified professional. Protect yourself and feel confident you are hiring a qualified professional by asking questions about experience, licensing, certifications, and customer service.

Experience

Does the company or individual contractor have experience installing and providing maintenance for the type of system you want installed? Do they warranty their installation work? Do they provide system commissioning? Ask for the contact information of other customers, and if possible, take time to see those systems and ask the owners about their experience with the system and the level of customer service received.

Licenses

Some states require a contractor to be licensed. Minnesota solar PV systems and their components are considered electrical equipment under the State Electric Code. Thus, a licensed electrician is required to connect grid-tied systems to the utility's grid. All electrical contractors and electricians must be licensed by the State Board of Electricity.

Insurance

Be sure to ask about and see confirmation of liability and workman's compensation insurance. Have they taken safety training?

Certifications

Many installers take specialized training and exams to receive certifications. The North American Board of Certified Energy Practitioners (NABCEP) is one group that tests and certifies solar electric and other renewable energy system professionals. The Clean Energy Project Builder website lists companies in Minnesota with NABCEP-certified professionals: cleanenergyprojectbuilder.org/nabcep-pv.

Trade organizations

Ask the company or installer if he/she is a member of a trade organization such as the Minnesota Solar Energy Industries Association (MnSEIA) and/or the Minnesota Renewable Energy Society (MRES). Are they a member of the Better Business Bureau (BBB)?

System Monitoring

Many companies now offer a system monitoring service that allows them/you to monitor the system through a web-based computer program. Ask your installer about what tool(s) they offer for you to be able to monitor your own systems output in an on-going, and ideally real-time way.

Where Can You Find an Installer?

The Clean Energy Project Builder website (cleanenergyprojectbuilder.org) provides a list of solar energy installers searchable by zip code. It lists companies, provides a company profile, lists relevant certifications and memberships, and in some instances references projects.

Comparing Bids

Get bids from more than one company and compare. Have bids specify the system type, size, electricity output, and maintenance requirements in addition to cost.

- Ask the installer if he/she installs packaged systems and whether the system or the individual components are UL certified
- Because different PV panels generate different amounts of electricity, ask for the maximum generating capacity (measured in DC watts or kilowatts) under a Standard set of Test Conditions (STC) or under PVUSA Test Conditions (PTC); Or, ask the electricity output of the system at the inverter
- Ask for an estimate of the amount of electricity the system will produce on an annual basis in units of kilowatt-hours (kWh) that will actually reach your electrical load
- Ask how the panels will be attached to the roof/what type of mounting system will be used
- Ask about whole system or individual component warranties; Some solar rebates require a minimum system warranty; Installers may offer longer warranties
- Ask that the bid include the following costs: installation, initial set-up and commissioning, all hardware, required National Electric Code (NEC) signage, permits, sales tax, and warranties

Post-Installation Considerations

Maintenance

Solar electric systems are low maintenance generally with no moving parts (apart from trackers), but like any electronic equipment, they do require routine, periodic attention for maximizing performance. System performance can now be monitored in a variety of ways. Qualified solar companies and contractors may also conduct system inspections and perform maintenance tasks. Ask your system installer what is required or recommended and be sure to read the owner's manual. Companies may provide a yearly maintenance checklist specific to your system, and it is recommended you hire a licensed and/or certified contractor for necessary maintenance.

System Monitoring

It is important to know your system is operating efficiently and producing the amount of electricity intended. Monitoring devices allow system owners to view production at any time and to view historical production for comparison over time. For example, inverters are equipped with a display that shows current and lifetime power production.

Web-based monitoring/data-logging systems allow you to access information from your own computer or anywhere internet access is available. The information can include equipment performance, how much electricity was sent to the utility grid, how much money was saved, and the amount of greenhouse gases not emitted.

Additional Resources

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Minnesota Department of Labor and Industry. (2014). Solar Photovoltaic (PV) Systems Questions and Answers. Retrieved September 29, 2015, from http://www.dli.mn.gov/CCLD/PDF/solarFAQ.pdf.

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By Susan Bilo, Sarah Hamlen, Mike Vogel, Milton Geiger.

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STEP 8: ELECTRICITY USE WORKSHEET

Electricity Use Worksheet

Address:_____ Calculated by:_____ Date:_____

Electrical Device	* Wattage (Volts x Amps = Watts)	X	# of Hours Used Per Day (when used)	X	# of Days Used Per Year	=	Watt-hours Used Per Year	Divide by 1,000 = kWh	Kilowatt-hours (kWh) Used Per Year
Example: Flat Screen TV	120 watts	X	2	X	269	=	64,560	$\frac{64,560}{1,000}$	64.56 kWh
Example: Dishwasher (not using the drying feature)	1200 watts	X	1	X	104	=	124,800	$\frac{124,800}{1,000}$	124.8 kWh
		X		X		=		$\frac{\quad}{1,000}$	
		X		X		=		$\frac{\quad}{1,000}$	
		X		X		=		$\frac{\quad}{1,000}$	
		X		X		=		$\frac{\quad}{1,000}$	
		X		X		=		$\frac{\quad}{1,000}$	
		X		X		=		$\frac{\quad}{1,000}$	

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Electrical Device	Wattage	X	Hours Used/Day	X	Days Used/Year	=	Watt-hours	÷1,000 =	KWh Used/Year
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
		X		X		=		____ / 1,000	
Total kilowatt-hours (kWh) Used Per Year									
Divide by 12 for Average KWh Used Per Month Use this number for the Solar System Sizing Exercises in Factsheet 5.									

* An electrical device has a metal plate/sticker showing **wattage** on or near the back or side. If not shown, use the amperes (amps) number times the voltage to get wattage.
Most U.S. appliances use 120 volts. Larger appliances (electric clothes dryers and cooktops) use 240 volts.

- **Refrigerators**: Because they cycle on and off to maintain a set temperature, divide the total time the refrigerator is plugged in by 3.