



ARLINGTON PUBLIC SCHOOLS
DISCOVERY ELEMENTARY
EXPLORERS



VMDO ARCHITECTS

Overview

Background

Design

Construction

Learning and Zero Net
Energy

Preliminary Energy Data

Lessons Learned



Discovery Elementary School

630 Students

Pre-K to 5th Grade

Approximately \$32 Million
Construction Cost

97,588 gsf / 15.5 Acres

Zero Net Energy Design



Design

Team

Siting, Massing, Envelope

Equipment Efficiency

Lighting

Renewable Technology



VMDO ARCHITECTS

Construction

Building Envelope

Equipment Efficiency and
Placement

Integrated Systems
Approach

Quality Checks and
Verification





Lighting



Learning and Zero Net Energy

Strong Leadership

Graphics, Signage, Wayfinding and Colors – Integrated with SOLs

Paperlight School

- Fewer copiers more digital programs
- Peachjar – electronic flyers



Learning and Zero Net Energy

National Wildlife Federation's Eco-Schools USA program

- Student-led project to reduce lunch waste
- Student leadership forms Eco-Action Team



Building Tours Led By Students

Student Led Transportation Tracking

Solar Laboratory, Bioretention Gardens and Solar Clock



Discovery: Preliminary Energy Report

Solar array operational on January 4, 2016

School zero-net energy over last invoice period (Mar 29 – Apr 26)

- Last period, returned 10,079 kWh to the grid ~ enough to power one home annually
- Average VA residential 2014 electricity rate \$0.111/kWh
- DVP income of \$1,119 for Discovery generation
- Standby charge \$1,060



Contract Demand: 350 kW; Actual Demand 179 kW			
	kW	rate	
	350	\$ 3.01	\$ 1,053.50
OR			
Monthly Minimum Charge per Electricity Supply kWh			
	kWh	rate	
	6,541	\$0.02803	\$ 183.34
PLUS			
4. b.	Total Distribution and Electricity Supply kWh Charge for the Billing Period as determined by applicable rates includes (no sales or fuel charges)		
	Basic Customer Charge		\$ 6.59
	Distribution Charge		\$ 72.15
	Supply Charge		\$ 272.30
	Rider Charges		\$ 124.02
		TOTAL	\$ 475.06
MINUS			
Electricity Supply kWh X Rate in 4.a.2			
	Distribution & Supply Charge		\$ 183.34
PLUS			
	Supply kWh X Fuel Charge		148.35
	4.b. TOTAL		\$ 440.07
	4 TOTAL		\$ 1,493.57
Sales and Use Surcharge			
			3.01
TOTAL MONTHLY INVOICE			\$ 1,496.58

		DVP Standby Charges	
		37,585 kWh is my break point. Under that standby charges are implemented.	
		<i>Understanding Charges</i>	
		<i>Importance of Contract Demand</i>	
		<i>Renewable Energy Model For Schools</i>	
		Rider B	8.24
		Rider S	27.34
		Rider T	58.67
		Rider B	1.57
		Rider W	16.16
		Rider BW	12.04
		4 TOTAL based on usage	\$ 623.41
		Sales and Use Surcharge	3.01
		04.06.16 Invoice based on usage if no standby chg	\$ 626.42



Lessons Learned

Team Composition

Team Commitment

Integrated Systems

Approach

Measurement and

Verification

Utility Commitment to

Solar

THANK YOU

