

Assiniboine & Sioux Tribes of the Fort Peck Indian Reservation





Office of Indian Energy Annual Program Review Sheraton Denver West Hotel Denver Colorado

Assiniboine & Sioux Tribes of the Fort Peck Indian Reservation Fort Peck Wellness Center Energy Project Poplar, Montana



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Fort Peck Indian Reservation



- # NE Montana
- # 2.1 Million Acres
- Checkerboard Land Pattern

Assiniboine & Sioux
11,000 members
6700 live on Reservation





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Fort Peck Wellness Center

Multi disciplinary Wellness/Activity Center

Initiated in 2012 by Health Promotion Disease Prevention Program

Established CAT (Construction Advisory Team) in October 2018, intertribal, multidisciplinary



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CAT Team

Planning Office – 2 Representatives **#** Tribes' Secretary Accountant # Environmental Office – 1 Rep # Legal Representation – 2 Reps # Health Prevention Staff - 6 Reps # Road Department – 1 Rep # Minerals – 1 Rep



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CAT Deliverables

- Secured Civil Engineering services
- Advertised and selected Architectural Firm
- Reviewed funding options
- Established footprint of building
- Determined appropriate amenities
- Supported Green infrastructure options including DOE Grant
- Secures Tribal Executive Board support through information sharing including public outreach



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Past Related Activities

"Model Green Tribal Community" – FPT Strategic Plan

- # Ground source heat pumps (GSHP) Adult Correctional Facility & 8 tribal homes
- # Rehab Cultural Center for increased insulation and lighting efficiency
- # GSHP and EE lighting installed on Phase III Tribal HQs and new Community Center
- # Sustainable Village









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Project Objectives:

- Objective 1: Install 72-78 kW of roof mounted solar Photo Voltaic System by the end of the 21st month
- Objective 2: Reduce utility bills by approximately 23% per year through installing 8 Building Energy Efficiency Measures (EEM's) by the end of the 21st month

Baseline Assumptions, IECC 2012 compliant building:

- Electric Usage: Approximately 900,000 kWh per year
- Natural Gas Usage: 65,262 therms per year (based on package VAV system)
- Total expected utility cost \$108,690.00 per year

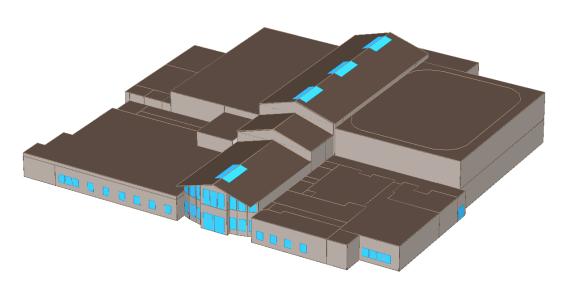
Energy Saving Expectations:

- Solar PV Arrays operating cost savings \$5,991.00
- 8 accepted building envelope, lighting, & VAV HVAC EEM's \$25,570.00 per year
- Total expected utility cost savings \$31,561.00 per year = 29% annual reduction





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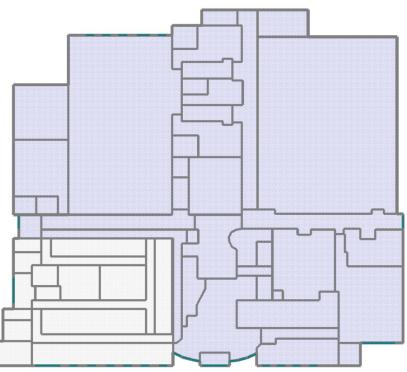
A detailed energy Simulation model was developed using eQuest (DOE 2.2) software.





Energy Savings:

- EEM's 15 options considered and modeled
- EEM's 8 options selected based on payback time frames





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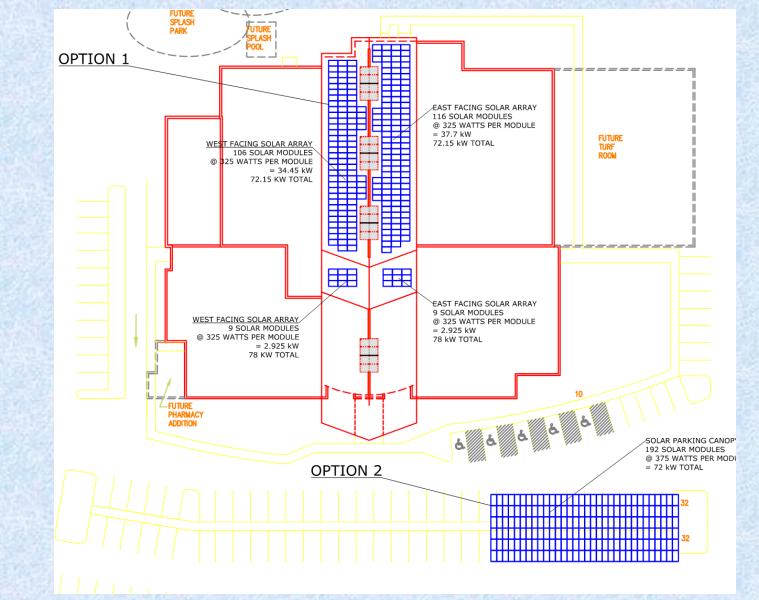
Γ			Fort Peck Wellness Cente	r					
	Item	Energy Efficiency Measure	Details		, gs per year	Cost Of Item (Baseline - EEM Cost)	Payback (Years)	EEM Accepted?	Reasoning for Acceptance or rejection
			Building Envelope and Lighting Componer	nts EEM	I Analysis				
	E2	Improved Wall R value	IECC 2012 Code minimum vs. architectural wall of R- 31.6	\$ 1	.,009.00	\$ 134,555.00	133	No	Poor payback
	E4	Improved Roof R Value	IECC 2012 Code minimum vs. architectural roof of R- 41.3	\$	592.00	\$ 89,970.00	152	No	Poor payback
	E8	Improved Windows	IECC 2012 Code minimum vs. triple glaze, Low E Argon Glass	\$	362.00	\$ 10,823.00	30	Yes	Longer Payback, but helps meet comfort of occupants
	E11	Improved Skylights	IECC 2012 baseline vs. High Performance U=0.16, SHG - 0.06	\$	475.00	\$ 11,896.00	25	Yes	Fair Payback
	L1	Provide High Efficiency Lighting (LED) and controls	IECC 2012 minimum vs. 0.6w/sf overall goal	\$ 9	9,681.00	\$ 53,466.00	6	Yes	Excellent payback
	C1	Evaluate standard efficiency Geothermal Heat Pump vs standard VAV	Use standard efficiency comparison VAV System EEM Analysis	\$ 1	,353.00	\$ 100,000.00	74	No	Poor Payback
ł			VAV System EEW Analysis				1	1	
	VM1	Utilize High Efficiency DX AHU	Versus Chilled Water AHU	\$	681.00	\$ -	-	Yes	Instant Payback
	VM2	Provide High Efficiency Chiller (if VAV)	Provide High Efficiency chiller vs. code minimum	\$ 1	.,726.00	\$ 54,000.00	31	No	Poor payback
	VM3	Provide High Efficiency Boiler (if VAV)	Use Condensing boiler vs. code minimum boiler	\$ 6	5,888.00	\$ 114,408.00	17	Yes	Fair Payback, Helps meet 27% efficiency Goal
	VM4	Provide Energy Recovery on AHU's	Provide heat wheel energy recovery between relief and fresh air	\$ 3	8,155.00	\$ 88,500.00	28	No	Will consume significant floor space in addition to moderate payback
	S1	Provide Transpired Solar Collector	Minimum outside air through "solar wall" type transpired solar collector	\$	243.00	\$ 10,200.00	42	No	Poor payback
			Pool Systems EEM Analysi	is					
лс		Provide Pool HVAC Dehumidification Unit with heat recovery for pool	Use heat recovery on the Pool Dehumidification unit for pool heating. Cost includes HVAC unit upgrade and necessary piping and valves to pipe pool water						
NC	VM5	heating Use High Efficiency	to the heat recovery HX	\$ 5	5,838.00	\$ 10,000.00	2	Yes	Excellent payback
	P1	Condensing Boiler for pool heating	Provide condensing boiler vs. 80% boiler for pool heating	\$	759.00	\$ 16,310.00	21	Yes	Fair Payback, Helps meet 24% efficiency Goal
		Use Geothermal HP for pool heating vs. standard 80%							
	P2	boiler		\$	(328.00)	N/A	N/A	No	No payback
	Р3	Utilize an Electric Pool cover	Use electrically operated pool cover (Pool Consultant)	\$	886.00	\$ 24,270.00	27	Yes	Fair Payback, will also reduce dehumidification load



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Energy Generation:

- Solar Photovoltaic Panels Option 1 and 2
- Wind Power Not considered due to recent system failures and significant maintenance issues



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CO2 Equivalents for EEM Energy Savings Including PV Panels

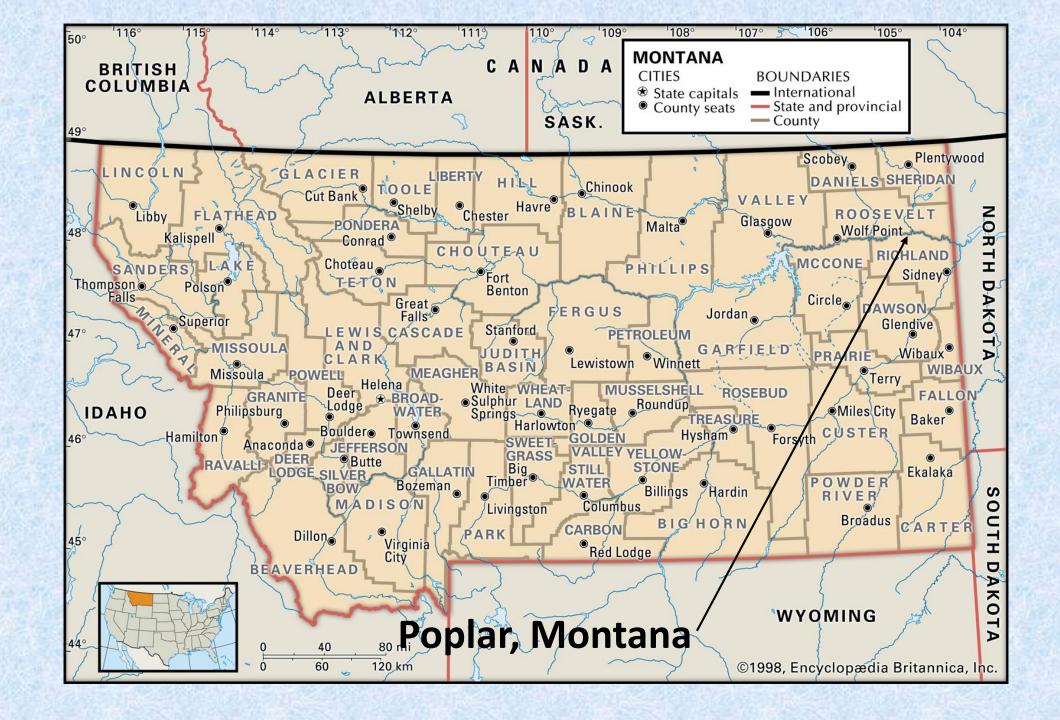
268.3	Metric Tons of CO2 equivalent
56.9	Passenger vehicles drive for 1 year
655,546	Miles Driven by an Average Passenger Vehicle
30,170	Gallons of Gasoline Consumed
293,114	Pounds of Coal burned
621	Barrels of oil consumed

Overall installing the accepted envelope, lighting, PV and VAV HVAC measures would result in energy savings of about \$31,561.00 per Year







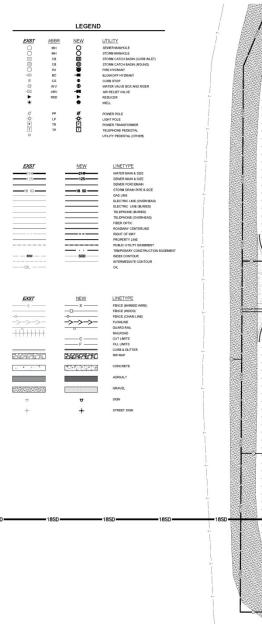


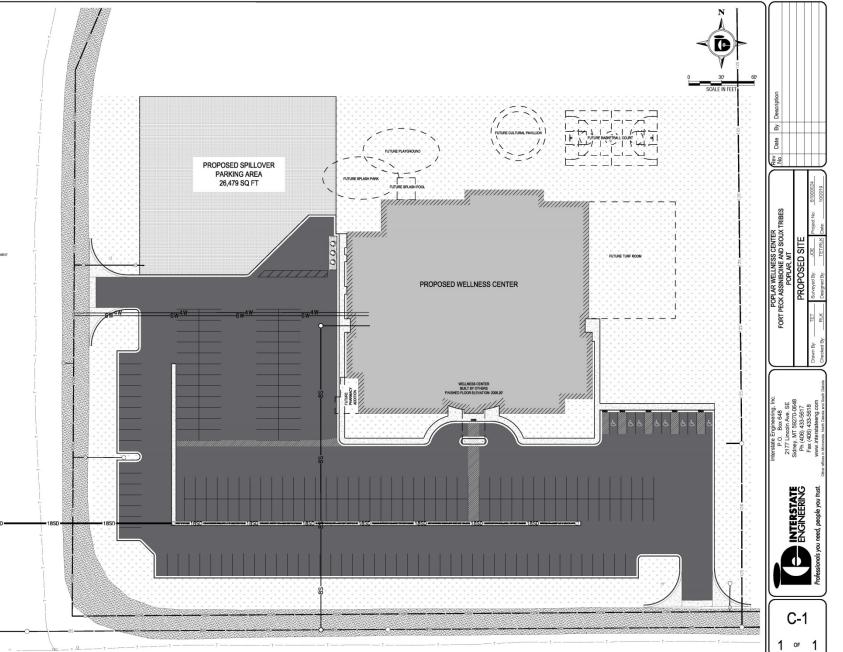


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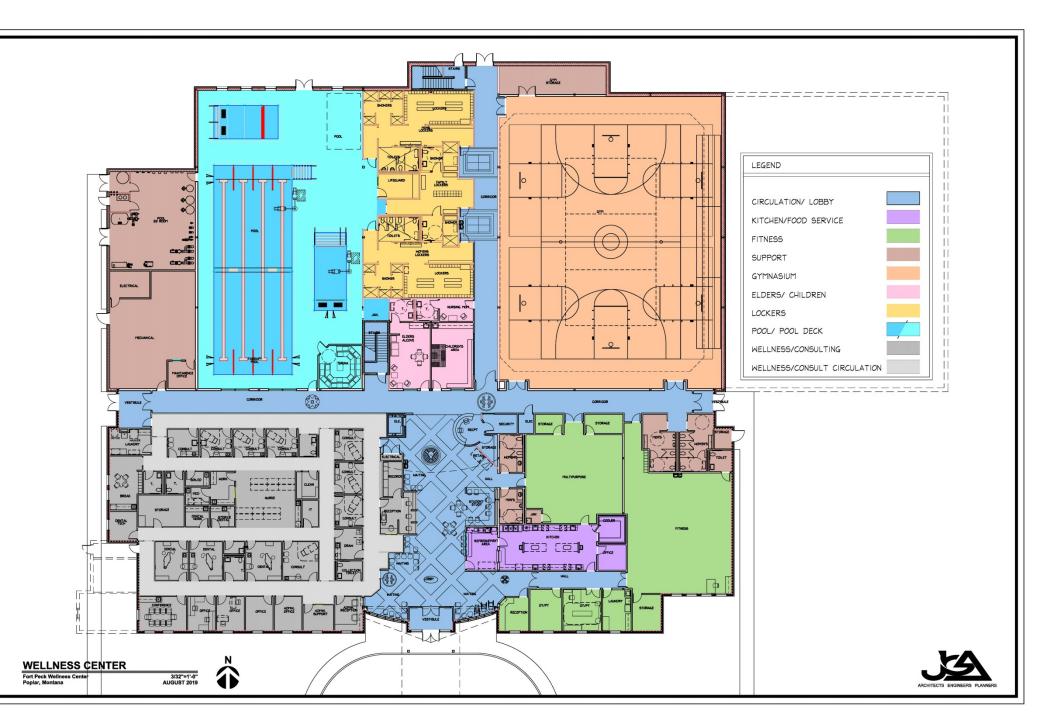




2: \Projects\2018\S19-00\024 - FP Tribes Wellness Center\CADD\DESIGN\EXPORT\EXPORT_DESIGN_10.3.19.dwg 10/3/2019

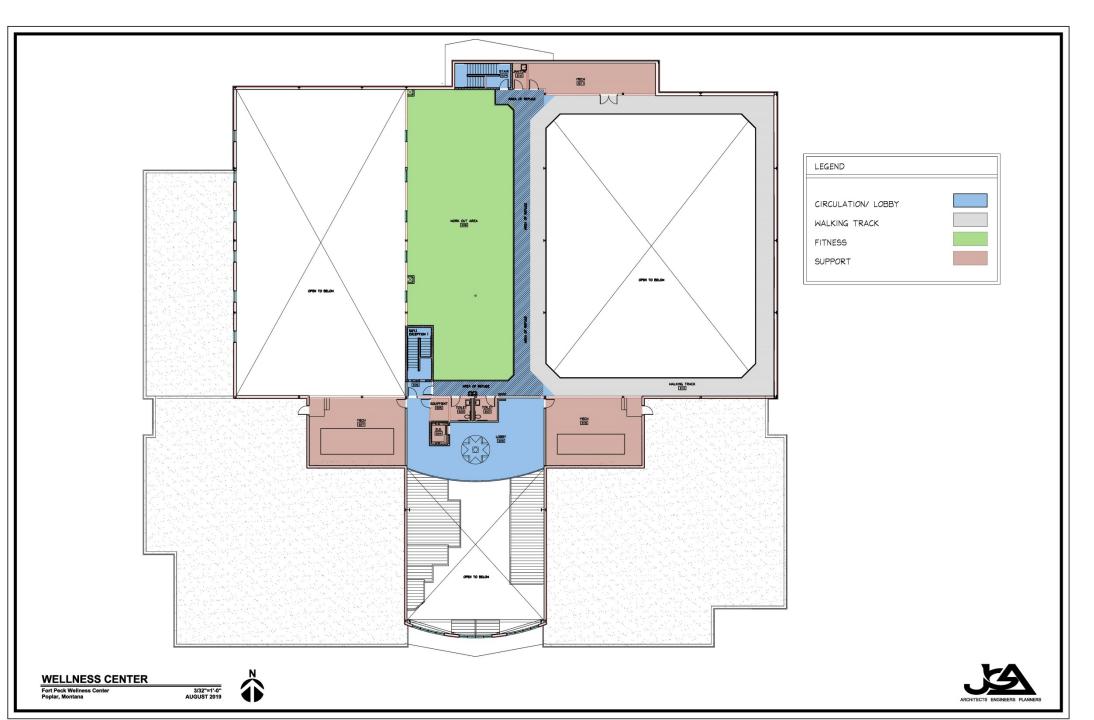


















































Fort Peck Tribes Wellness Center Poplar, Montana March 28, 2019									
ask Name of Peck Tribes Wellness Center	Start Thu 12/20/18	Finish Tue 5/14/19	Decem Januar Febru (March April May June July August Septe Octobe Novem Decem Januar Febru March April May June July August Septe Octobe Novem Decem Januar Febru March April May June July August Septe Octobe Novem Decem Januar Febru March April 1						
Phase 1 Services - Preliminary Design and Programming	Thu 12/20/18	Tue 5/14/19							
Kick-off meeting, communications plan/goal setting	Thu 12/20/18	Thu 12/20/18							
Research and data gathering	Fri 12/21/18	Wed 1/2/19							
Programming Session	Thu 1/3/19	Thu 1/3/19							
Prodesign	Fri 1/4/19	Fri 1/11/19							
Presentation of Program & Conceptual Design	Mon 1/14/19	Mon 1/14/19							
Owner review and approval Program refinement	Tue 1/15/19 Wed 1/30/19	Tue 1/29/19 Wed 2/6/19							
Program reinnement	Thu 2/7/19								
	0.0000000	Thu 3/28/19							
DOE Grant Assistance	Fri 3/29/19 Wed 5/1/19	Tue 4/30/19							
Owner Review and Approval		Tue 5/14/19							
e 2 Services - Schematic Design (SD) 10% Completion	Wed 5/1/19	Fri 6/25/21							
Schematic design documents	Wed 5/15/19	Tue 6/25/19							
SD - Cost model update	Wed 6/26/19	Mon 7/1/19	96						
Facilities Roundtable	Tue 7/2/19	Tue 7/2/19							
Owner Review and approval	Wed 7/3/19	Mon 7/8/19							
Design Development (DD) integration 35% Completion	Wed 5/1/19	Mon 9/23/19							
User review sessions	Tue 7/9/19	Wed 7/10/19							
Design Development Drawings	Thu 7/11/19	Wed 9/11/19							
DOE Grant Award Notification	Wed 5/1/19	Thu 8/1/19							
EEM's and PV System input/coordination/Finalize Building Envelope detail	Mon 8/5/19	Fri 9/6/19							
Engineering Coordination Meeting	Thu 9/12/19	Thu 9/12/19							
DD Cost Model update	Fri 9/13/19	Wed 9/18/19	्रम् म्						
Owner Review and approval	Thu 9/19/19	Mon 9/23/19	90						
onstruction Document (CD) integration 60% Completion	Tue 9/24/19	Tue 1/21/20							
Completion of CDs by design team	Tue 9/24/19	Tue 1/7/20							
Finalize CD's & Building Envelope CD's - EEM's - E2, E4, E8 and E11	Tue 9/24/19	Tue 1/7/20							
Finalize the CD's for EEM - L1 High Efficiency Lighting	Mon 9/30/19	Fri 10/11/19							
Finalize the CD's For EEM - VM1 High Efficiency DX AHU	Mon 10/14/19	Fri 10/25/19							
Finalize the CD's for EEM - VM3 High Efficiency Boiler	Mon 10/28/19	Fri 11/8/19							
Finalize the CD'S for EEM - VM5 Dehumid Heat recovery for pool	Mon 11/11/19	Fri 11/22/19							
Finalize the CD's for EEM - P1 High Efficiency Boiler for Pool	Mon 11/25/19	Fri 12/6/19							
Finalize the CD'S for EEM - P3 Pool Covers	Mon 12/9/19	Fri 12/20/19							
Finalize the CD's for EEM - PV1 Photovoltaic Array on Roof	Mon 12/23/19	Fri 1/3/20							
CD's cost model refinement	Mon 1/6/20	Thu 1/9/20							
Owner Review and approval 90% completion	Fri 1/10/20	Wed 1/15/20							
CD pick-ups	Thu 1/16/20	Mon 1/20/20							
Second review 100% Completion	Tue 1/21/20	Tue 1/21/20							
Bidding/Plan Review and Permitting	Wed 1/22/20	Thu 2/20/20							
Advertising for Bids	Wed 1/22/20	Thu 2/6/20							
Submission to AHJ for Plan review	Wed 1/22/20	Tue 2/4/20							
Pre-bid meeting - with Special emphasis on EEM's and PV Systems	Wed 2/5/20	Wed 2/5/20	₩2 ₩						
Bid opening	Thu 2/6/20	Thu 2/6/20							
Contracts/notice to proceed	Fri 2/7/20	Thu 2/20/20							
contraction proceed	Fri 2/21/20	Fri 6/25/21							
Construction Administration (CA)	Fri 2/21/20	Mon 6/21/21							
Building construction	Fri 2/21/20	Mon 6/21/21							
Substantial Completion/Final acceptance	Tue 6/22/21	Fri 6/25/21							
nty inspection - 11 months	Thu 5/26/22	Thu 5/26/22							

QUESTIONS & ANSWERS

