

*Infrastructure Team5*

presents

# Timeline for Infrastructure

Exploring the Requirements for a Moon Village

# Timeline as Planning Tool

This timeline is a guide for planning and managing infrastructure for a lunar base.

The Infra5 team noticed a need for exploring different stages and scales of Moon Village development because they require different design strategies for optimal implementation.

# Significance

What planning tools are needed for an international city on the Moon?

Lunar base would create a destination for partner organizations and nations to perform research, settlement, commerce and other activities on the Moon.

The biggest obstacle to a planning timeline is encapsulating the right variables to properly track the project.

Case Studies related to this include SSERVI's *Scientists reveal design plans for future lunar base* and Shana Dale's *Exploration Strategy and Architecture*.

Continue capturing variables, encourage others to use tool.

# Assumptions

Location is Shackelton Crater.

Multinational, multi-party, public-private partnership.

Minimum 20 kWh per person - ISS numbers.

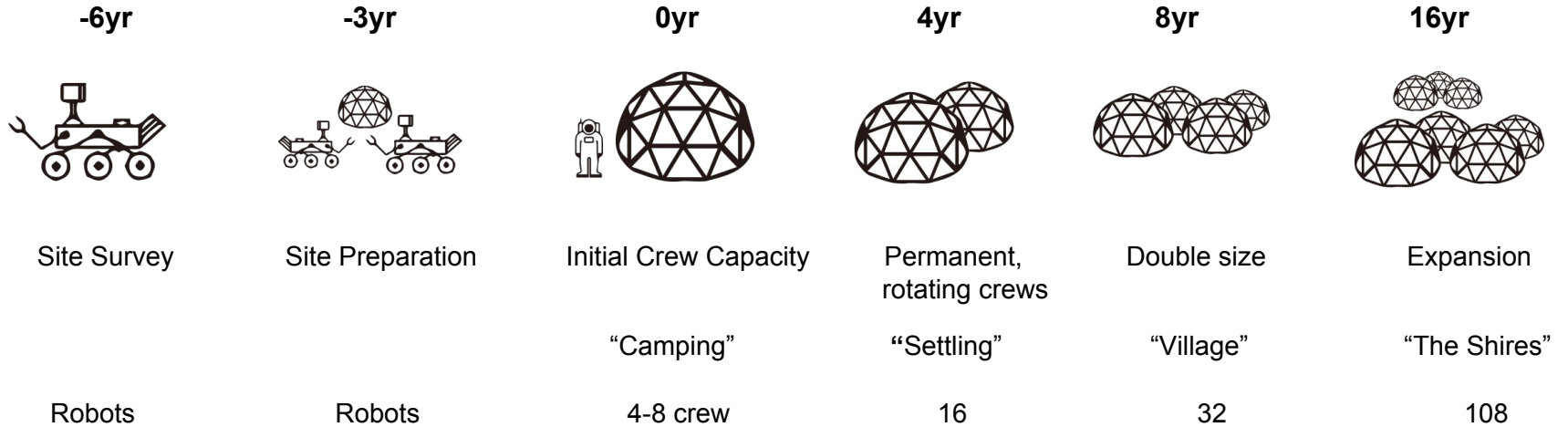
Lockheed or Polywell field a working fusion reactor by +15 years.

Photovoltaic Tower provides ~300 kWh, 500m tall, ~1500<sup>m</sup> @ 28% efficiency.

Private companies are startups not established entities.

Bandwidth is increasing between Earth and the Moon.

# Stages of Developments



Space Agencies

Corp:Base Prep

University Researchers

Corp:Volatiles (Dev)

Corp:Private Base

# Energy Strategy

**-3yr**



Robots

20-100 kWh

Flat PV field

Nuke 1

**0yr**



**4-8 crew**

**160 kWh**

**Flat PV field**

**Nuke 2**

**4yr**



16

320 kWh

PV Tower1

Nuke 3

**8yr**



32

640 kWh

PV Tower 2

Nuke 4-6

**16yr**



108

2160 kWh

PV Towers 3-7

FUSION

# Health Strategy

**-3yr**



Robots

**0yr**



4-8 crew

**4yr**



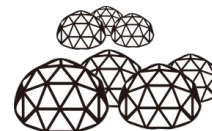
16

**8yr**



32

**16yr**



108

Personal A.I. Companion

Telepresence with Earth

Psychologist support

Common Recreational Space

Common Open Space / "Park"

EMT + Evac

Doctor

"Surgical Closet"

Sickbay

# Planning Spreadsheet V1.0

	Year 0	Year 6	Year 9	Year 12	Year 16	Year 20	Year 28	
<b>Phase Name</b>	Approval	Site Surveys	Site Preparation	<b>Camping</b>	Settling	Village	The Shires	
<b>Status</b>	Regolith	Rovers	Construction Ro	<b>Initial Crew Cap</b>	Permanent, rotat	Double size	Expansion and new bases	
<b>Parties</b>	NASA	NASA/ESA/RSA	Add Corp:BasePrep		Add University R	Add Corp:Metal(I	Add Corp:PrivateBase	
<b>Startups</b>	Corp:BasePrep	Corp:Volatiles	Corp:Metals		Corp:PrivateBase			
<b>Population</b>	Regolith	regolith	Robotos	<b>4-8</b>	16	32	108	
<b>Electricity Requirement</b>			20-100kWh	<b>160kWh</b>	320kWh	640kWh	2160kWh	
<b>Photovoltaic Power Scenario</b>			Flat PV field	<b>Flat PV field</b>	PV Tower1	PV Tower2	PV Towers3-7	
<b>Nuclear Power Scenario</b>	SP100 testing		Nuke1	<b>Nuke2</b>	Nuke3	Nuke4-6	FUSION	
<b>Mental Health</b>				<b>Earth Comms, A</b>	same	Add psychologist	Add park	
<b>Medical</b>			Robot Doc	<b>EMT &amp; Evac</b>	Add Doctor	Add Surgical Clo	Add 3 person Sickbay/Clinic	
<b>Emergency Procedures</b>				<b>Evac</b>	Evac, Bunker	Bunker	Bunker	
<b>Construction Tectonic</b>			Ex	<b>Ex</b>	Ex	In & Ex	In & Ex	
<b>Water Source</b>				<b>Import</b>	50/50	in-situ	in-situ	
<b>Soft Infrastructure (Institutions)</b>	Presidential App	Coordination institute like TSS						
<b>ISRU</b>			Regolith process	<b>sunlight</b>	water	metal		



# References

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