



न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड
Nuclear Power Corporation of India Ltd.
(भारत सरकार का उद्यम A Government of India Enterprise)



कुडनकुलम न्यूक्लियर पावर प्रोजेक्ट
Kudankulam Nuclear Power Project

कुडनकुलम पोस्ट, राधापुरम तालुक, तिरुनेलवेली जिला, तमिलनाडु 627106-
Kudankulam P.O., Radhapuram Taluk, Tirunelveli District, Tamil Nadu-627106

अब्राहम जैकब जे, मुख्य अभियंता (आधारभूत संरचना एवं ईएंडआई)

Abraham Jacob J, Chief Engineer (Infrastructure & E&I)

☎ 04637- 282503, ई-मेल E-mail: jajacob@npcil.co.in



सं .No. एनपीसीआईएल NPCIL/केकेएनपीपी KKNPP/ ईएंडआई इंफ्रा-E&I-Infra/2023/एस S/

दिनांक Date: 04-04-2023

Sub: Invitation for expression of interest (EOI) for “Establishment of Mini Science Lab for Government Higher Secondary School and Government High School”.

Dear Sir/Madam,

NPCIL,KKNPP, Kudankulam under its CSR programme intends to establish Mini Science Lab for Government HSS and HS in neighbouring villages in four schools. The estimated cost is Rs 22,50,000/-.

We invite the Expression of Interest (EOI) for the project of “Establishment of Mini Science Lab in Government HSS and HS” on item rate basis. The quotation is called to fill the price bid in the Annexure-1.

Experienced of bidders in the field of “Establishment of Mini Science Laboratory in any Schools/Educational Institutions” shall be required for our consideration. The bidder should have completed 2 nos. of establishment of Mini Science Lab in any educational institutions / Schools in India.

Please submit the EOI within 5 days from receipt of this letter positively by giving details of experience in similar field, with project cost. Attach the copy of MOU/PO/WO executed previously by your company/NGO/Trust.

Thanking you,

Yours faithfully,

Abraham Jacob
05/04/23

A. Abraham Jacob

(Chairman, Unit Level CSR Committee)

To

The Bidders

पंजीकृत कार्यालय : 16वाँ तल, सेंटर-1, विश्व व्यापार केंद्र, कफ परेड, कुलाबा, मुंबई - 400 005

Reg. Office: 16th Floor, Centre-1, WTC, Cuffe Parade, Colaba, Mumbai - 400 005

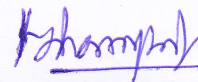
सीआईएन CIN: U40104MH1987GOI149458 वेबसाइट.Website.: www.npcil.nic.in

Special Conditions:

1. Party should not have been blacklisted by Central/ State Govt. and should not have any pending legal action
2. The NGOs / TRUST/Society must have CSR Form-1
3. The bidder shall have completed establishment of 2 no. of Mini Science lab in any Educational institutions/ Schools in India.
4. The evaluation of price bids shall be done by NPCIL on overall lowest offer basis.
5. Qualified L1 bidder shall sign MOU for starting the work of "Establishment of Mini Science Lab for HSS / HS".
6. The quoted price shall be inclusive of GST packing & forwarding.
7. The period of work shall be two months.
8. Tender download period : From 06.04.2023 to 12.04.2023
9. Last date of bid submission : 17.04.2023 up to 10:00hrs
10. The firms fulfilling the minimum qualifying criteria shall be short listed and their price bids will be opened.
11. The work shall be terminated by giving one month's notice on the grounds of unsatisfactory performance.

Payment Terms:

NPCIL shall make payment against bill claim (in Triplicate) after successful completion of work. Statutory levies / Taxes as applicable shall be deducted.



A. Abraham Jacob

(Chairman, Unit Level CSR Committee)

TECHNICAL SPECIFICATION

SCOPE OF WORK AND CONDITIONS

Name of the work: "Establishment of Mini Science Lab for Government Higher Secondary School and Government High School"

Scope of work: Providing Mini Science Lab in the following 4 schools with following equipment.

1. NVC Govt Hr Sec school, Radhapuram
2. Govt Hr sec school, Chettikulam
3. Govt Hr Sec School, Kudankulam
4. Govt High School, Mathaganeri

Technical Specification: All the science models should be working all the time and should demonstrate the concerned scientific concepts. These models may be in wall mounted / table top 18mm particle board (BSL), 10 running ft and 1.5 ft width aluminium or MS clipping underneath switches with tripper and wiring done from internal board. All the back drops / display boards shall be in bilingual (Tamil & English).

Sr. No.	Name of the model	Concepts which can be explained using model	Electrical/Non Electrical	Area of Understanding
1	Magic Water Tap	Optical Illusion. Refractive index of medium, refraction	Electrical	Separation Of Substances Light – Reflection and Refraction
2	Newton's disk	White light is made up of 7 colors (VIBGYOR).	Electrical	Light, Shadows, and Reflections Light Light Light – Reflection and Refraction
3	Color Shadow	Combinations of primary colours, additive mixture of primary colours	Electrical	Light, Shadows, and Reflections Light Light Light – Reflection and Refraction
4	Infinity Tunnel	Multiple reflection. image in parallel and facing mirrors. (mirrors in salon.)	Electrical	Light, Shadows, and Reflections Light Light Light – Reflection and Refraction
5	Reflection and Transmission	Application of law's of reflection. Transmission	Electrical	Light, Shadows, and Reflections Light Light Light – Reflection and Refraction
6	Parrot in the Cage	Persistence of vision	Electrical	Light, Shadows, and Reflections Light

7	Solar Light	Conversion of solar energy into electricity. renewable energy, solar panel	Electrical	Changes Around Us
				Sources of energy
8	Wind Mill	Principle of wind mill. Conversion of wind energy into electricity	Electrical	Changes Around Us
				Sources of energy
9	Action and Reaction	Newton's 3rd law of motion.	Electrical	Force and laws of motion
10	Floating Ball	Bernoulli's principle. Effect of air flow on object.	Electrical	Force & Pressure
11	Floating Fan	Bernoulli's principle . Relation between air flow and speed. Even action-reaction forces to some extent.	Electrical	Force & Pressure
12	Tornado	Atmospheric disturbances, currents, storms.	Electrical	Changes Around Us
				Heat and Temperature
				Our Environment
13	Electric bell	Functions of an electromagnet	Non Electrical	Fun with Magnets
				Magnetic effects of electric current
14	Conductors and Insulators	Difference between conductor and insulator of electricity	Electrical	Separation Of Substances
				Physical and chemical changes
15	Heat absorption	Black Body, Heat Reflection, Color Temperature	Electrical	Heat and Temperature
16	Constellations viewer	Identification and study of constellations	Electrical	Changes Around Us
				Constellations and Galaxies
				Stars and the Solar System
17	Shape of earth's due to rotation	SHAPE OF EARTH DUE TO ROTATION	Electrical	Changes Around Us
				Stars & The Solar System
18	Law's of Reflection	Law's of reflection from plane mirror. Angle of incidence = angle of reflection.	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and Refraction
19	Kaleidoscope	Multiple reflection. Symmetry	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and Refraction
20	Periscope	Application of law's of reflection. Angle of incidence and angle of reflection	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and

				Refraction
21	Corner Mirror	Multiple reflection. Image formula($N=360/A - 1$)	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and Refraction
22	Total Internal Reflection.	Total internal reflection, bending of light ray. Optical fibre	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and Refraction
23	Funny mirrors	Different types of mirrors. Propagation of light.	Non Electrical	Light, Shadows, and Reflections
				Light
				Light
				Light – Reflection and Refraction
24	Zoetrope	Persistence of vision. The basic concept of motion picture	Non Electrical	Light, Shadows, and Reflections
				Light – Reflection and Refraction
				Human eye and the colourful world
25	Pin screen	Pressure-area relation. Even representation of pixels.	Non Electrical	Force & Pressure
				Force and laws of motion
26	Viscosity Tube	Buoyancy or viscosity.	Non Electrical	Separation Of Substances
				Force & Pressure
27	Law of Inertia	Newton's first law. Inertia is opposing change in state of rest.	Non Electrical	Acceleration
				Force & Pressure
				Force and laws of motion
28	Circle and Ball	Newton's first law. Inertia as opposing change in motion.	Non Electrical	Acceleration
				Force & Pressure
				Force and laws of motion
29	Hand Pump	Application of pressure to pump water. Pressure-volume relation.	Non Electrical	Life Processes
30	Floating magnets	Properties of magnet. Attraction in opposite poles and repulsion in like poles	Non Electrical	Fun with magnets
31	Magnetic Field Tube and Immiscible Tube	Magnetic Field & Properties of magnet. Density and Polarity of molecules	Non Electrical	Fun with magnets
				Matter in our surroundings
32	Fun with magnets	Types of magnets & their use	Non Electrical	Fun with magnets
33	Lazy tube	Magnetic Field and Forces, Eddy current, Lenz Law	Non Electrical	Fun with magnets
				Magnetic effects of electric current
34	Pythagoras and Moire pattern	Pythagoras theorem and Interference of light	Non Electrical	Understanding Elementary Shapes

				Properties of Triangles
				Right Angle Triangles
				Light and Reflection
35	Elliptical carrom board	Conic sections.Keplers Law Properties of ellipse.	Non Electrical	Circles
36	Two Congruent right Triangles	Comparison of area of different geometric shapes.	Non Electrical	Understanding Elementary Shapes
				Congruency
37	Area of a Circle	Simple illustration of derivation of area of circle	Non Electrical	Geometrical Constrution
				Circles
				Areas related to circles
38	$(a+b)^2 = a^2+2ab+b^2$	Geometric illustration of basic algebraic identity	Non Electrical	Algebraic Expressions
				Algebraic Identities
39	$(a+b+c)^2 = a^2+b^2+c^2+2ab+2bc+2ca$	Geometric illustration of basic algebraic identity	Non Electrical	Algebraic Identities
40	$a^2-b^2=(a+b)(a-b)$	Geometric illustration of basic algebraic identity	Non Electrical	Algebraic Expressions
				Algebraic Identities
41	Sum of the angles of a triangle	Elementry theorem of maths. "sum of all three angles of any traiangle=180 "	Non Electrical	Understanding Elementary Shapes
42	Tangram	Interesting puzzle. basic geometric shapes.	Non Electrical	
43	$(A+B)^2 - (A-B)^2 = 4AB$	Geometric illustration of basic algebraic identity	Non Electrical	Factorisation
44	Area of rhombus	Simple illustration of derivation of area of rhombus	Non Electrical	Geometrical Constrution
				Understanding Quadrilaterals
				Quadrilateral
45	Area of triangle	Simple illustration of derivation of Area of Triangle	Non Electrical	Understanding Elementary Shapes
				Geometrical Constrution
				Understanding Quadrilaterals
				Areas of parallelograms and triangles
46	Area of parallelogram	Simple illustration of derivation of area of parallelogram	Non Electrical	Geometrical Constrution
				Understanding Quadrilaterals
				Quadrilateral
				Areas of parallelograms and triangles
47	Sum of angles of a quadrilateral	Elementry theorem of maths. "sum of angles of a quadrilateral is 360"	Non Electrical	Understanding Elementary Shapes
				Quadrilateral
48	Organ pipes	Sound of different frequencies and wavelengths. Musical notes.	Non Electrical	Motion and Measurement of Distances
				Sound

				Energy
49	Transverse wave pendulum	Mechanical wave. transverse wave. Representation of vibrating particles and propagating wave	Non Electrical	Motion and Measurement of Distances
				Sound
50	Coupled pendulum	Sympathetic swings. Oscillation	Non Electrical	Motion and Measurement of Distances
				Sound
				Work and Energy
51	Newton's cradle	Conservation of momentum. Conservation of energy. Properties of collision.	Non Electrical	Force and laws of motion
52	KE PE track	Conversion of P.E. to K.E.	Non Electrical	Work and Energy
53	Loop the Loop	Conversion of P.E. to K.E. centrifugal force.	Non Electrical	Work and Energy
54	Cone run uphill	Mass. Center of gravity. Stability of structure	Non Electrical	Symmetry
				Representation Of 3 Dimensional Objects in 2 Dimensional Figures
				Surface areas and volumes
55	Tower of pisa	Center of gravity. Gravitation. Stability of structure.	Non Electrical	Gravitation
56	Hand Battery	Electric potential difference. Electric battery. Chemical effect of electric current	Non Electrical	Chemical Effects of Electric Current
				Metals and Non metals
57	Lever	Lever. Type of lever.	Non Electrical	Work and Energy
58	Pulley Block	Pulley- simple machine.	Non Electrical	Energy
				Work and Energy
59	Wheel and axle	How it is easy to rotate wheel when force is applied at a point distant from center.	Non Electrical	Energy
				Work and Energy
60	Parking Puzzle	Puzzle and mathematical logic and algorithms	Non Electrical	
61	Rock and Minerals	different types of rock and mineral samples.	Non Electrical	Matter in our surroundings
62	DNA	Double helix structure of DNA. A-T and G-C joints.	Non Electrical	Fundamental unit of life
				Heredity and Evolution
63	Anamorph	Perspective, Illusion and Graphical projection	Non Electrical	Light - Reflection and Refraction
64	Weight illusion	Mass, Weight, Perception, illusion	Non Electrical	Gravitation
65	Magnetic Effects of Current	Magnetism due to Electricity Compass, Deflection, Magnetic field	Non Electrical	Magnetic Effect of Electrical Current
66	Refraction Cylinder	Refraction of light, Alphabet Symmetry	Non Electrical	Light - Reflection and Refraction

67	Lateral Shift	Refraction of light, Bending of light	Non Electrical	Light - Reflection and Refraction
68	Hyperbola	Hyperbola, Conic Section, Locus of curve	Electrical	Conic Sections
69	Forces and Types of Friction	Friction,, Texture of surfaces, Speed , Rolling friction	Non Electrical	Friction
70	Area of Trapezium	Area of quadrilateral, Area of trapezium,Parallelogram	Non Electrical	Area of Parallelograms and Triangles
71	T Puzzle	Puzzle, polygonal shapes Brain teaser, Topology	Non Electrical	
72	Rope puzzle	Puzzle, polygonal shapes Brain teaser, Topology	Non Electrical	
73	Marble Slide	Conservation of momentum.Conservation of energy. Properties of collision.	Non Electrical	Force and Laws Of Motion
74	Moment of Inertia	Mass, Distribution of mass Rotational inertia	Non Electrical	Gravitation
75	Resonance	Frequency of sound, Resonant frequency	Non Electrical	Sound
76	Human Torso	Human Body, Anatomy, Organs, Functions of Body parts	Non Electrical	Body Movements
77	Ear and Eye	Sense organs,Functions of body parts Vision, Hearing	Non Electrical	Super Senses
78	Plant Cell	Functions and Parts of cell	Non Electrical	The Fundamental Unit of Life
79	Animal Cell	Eukaryotic cells, Difference between cells Parts of cell	Non Electrical	The Fundamental Unit of Life
80	Human Joints	Types of joint in human body Bones and ligaments	Non Electrical	Body Movements

Material issue	Remarks
Materials to be provided for the job by NPCIL.	Nil
Facilities to be provided by NPCIL – Indicate free or chargeable. (For example scaffolding materials, tools & tackles, forklift, office/ work place (define area & nature), accommodation/transportation, etc)	Nil
List of consumable to be supplied by NPCIL	Nil

Special Conditions:

1	Party should not have been blacklisted by Central/ State Govt. and should not have any pending legal action
2	The NGOs / TRUST must have CSR Form-1 Registration
3	Laying / routing of electrical cables and wires, their connections shall be done following all applicable standards and safety measures. The quality of finished work shall have no risk of electric shock, acid spill / leak, fall of objects and sharp edges to endanger the students and teachers.
4	The bidder shall take all safety precautions during execution of awarded work.
5	Proper guards, fencing, warning signs, caution boards and room illuminations shall be arranged by the bidders permanently in the area of setting of up mini science laboratory under the scope of this work.
6	Science models, their supporting platforms, pipes, planks, electrical items, display boards shall be strong enough, made up of good/branded materials and long lasting. Backdrops shall be legible (Appropriate Font & Dark coloured clear pictures)
7	Teachers shall be given training / Guidance of the installed models
8	After installation of science models, the bidder shall monitor and evaluate the functionality of all models by two visits to individual school with interval of 15days.

- The firms fulfilling the minimum qualifying criteria shall be short listed and their price bids will be opened.
- The evaluation of price bids shall be done by NPCIL on overall lowest offer basis.
- The work shall be terminated by giving one month's notice on the grounds of unsatisfactory performance.
- Any dispute arising during work execution, the decision of Engineer in Charge shall be final and binding.

Payment:

NPCIL shall make payment against bill claim (in Triplicate) after successful completion of work. Statutory levies / Tax as applicable shall be deducted.

PRICE BIDSchedule Of Quantities and Rates (SOQR)

Name of the work:

“Establishment of Mini Science Lab for Government Higher Secondary School and Government High School”

Sl.No.	Description of Work	Quantity	Unit	Unit Rate	Total
1.	Setting up a “Mini Science Lab” in the Government Schools. The lab shall contain 80 no. of plug and play models and 40 no. of backdrops (in bilingual- Tamil & English), mapped to about 120 curriculum topics and concepts of Mathematics & Science to - Develop education skills of school students. - Enhance constructive imagination of school students. - Set goals for best practical approach. - Create new avenues for learning The scope is inclusive of supply, installation, working of models and handing over with materials & Installation report as per the technical specification attached herewith. <u>Note:</u> The unit one “Set” means the complete establishment of “Mini Science Lab” as per above specification in one school out of four schools requirement.	04	Set		

Applicable cost for GST and statutory requirement, if any shall be included in unit rate.

I have read and have understood all the terms and condition.

I have attached the relevant documents.

(Signature, date & Seal)

 Address _____

e- mail id

Contact Person

Contact No.

The Engineer In charge & Chairman (CSR)
 NPCIL,KKNPP, Kudankulam P.O
 Radhapuram Taluk,
 Tirunelveli District, Tamil Nadu-627106