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### About UPRVUNL

Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited, a wholly owned state thermal power generation utility, was constituted on dated 25.08.1980 under the Companies' Act 1956 for construction of new thermal power projects in the state of Uttar Pradesh. It has following present and upcoming generating stations:

#### Generating Stations

UPRVUNL is operating 4 Thermal Power Stations within Uttar Pradesh having a total generating capacity of 5474 MW. The details of the operating generating stations are as given under:

Name of Power Station	Derated Capacity	Total Capacity	Annual Coal Consumption in year 2018-19 (Lac MT)	Annual Ash Generation in year 2018-19 (Lac MT)
ANPARA, SONEBHADRA	3x210MW =630 MW 2x500 MW =1000 MW 2x500 MW =1000 MW	2630 MW	127.487	47.798
OBRA, SONEBHADRA	1x94MW =94 MW 5x200 MW =1000 MW	1094 MW	25.646	9.743
PARICHHA, JHANSI	2x110 MW =220 MW 2x210 MW =420 MW 2x250 MW =500 MW	1140 MW	33.999	13.401
HARDUAGANJ, ALIGARH	1x110 MW=110 MW 2x250 MW= 500MW	610 MW	19.176	7.889
<b>Total</b>		<b>5474 MW</b>	<b>206.308</b>	<b>78.831</b>

#### Future Capacity Additions

UPRVUNL is developing additional 6225 MW (3960 MW of own projects and 2265 MW capacity share from Joint Ventures) of new power projects which are expected to be commissioned during the period of FY 2018-22.

#### Projects under construction

UPRVUNL has envisaged the latest technologies of thermal power stations with minimum coal consumption having minimal effect on environment and producing low cost electricity for the people of Uttar Pradesh. Presently 3960 MW of generation capacity based on latest Super Critical Technology is being added to the existing Installed capacity. The details of the under construction projects are as under:

Sl. No.	Project	Location	Capacity Addition
1	Harduaganj Extension-II	Harduaganj, Aligarh	1x660 MW
2	Obra 'C' Extension	Obra ,Sonbhadra	2x660 MW
3	Jawaharpur	Jawaharpur, Etah	2x660 MW
4	Panki Extension	Panki, Kanpur	1x660 MW
<b>Total</b>			<b>3960 MW</b>

### Joint Venture

UPRVUNL is also developing 3300 MW capacity under Joint Venture with NTPC Ltd and NLC India Ltd. The details of the JV projects are as under:

Sl No.	Project	Ownership	Location	Capacity	Capacity share of UPRVUNL
1	Meja TPS	UPRVUNL & NTPC	Meja, Allahabad	2x660 MW	990 MW (75% of Installed capacity)
2	Ghatampur TPS	UPRVUNL & NLC	Ghatampur, Kanpur	3x660 MW	1275 MW (64.93% of Installed capacity)
<b>Total</b>				<b>3300 MW</b>	<b>2265 MW</b>

### **Current Challenges in Ash Utilisation**

Currently, UPRVUNL is able to achieve more than 90% Ash Utilisation at its Parichha and Harduaganj Power Stations. However, it faces the following challenges in ash utilisation at its Anpara and Obra Power Stations:

- Anpara and Obra TPSs of UPRVUNL are situated in Singrauli region of Uttar Pradesh. This region is a power hub and has several power stations of NTPC, Reliance, etc.
- Due to presence of several power plants in the region, there is an abundant quantity of generated fly ash,
- Only two major cement industries are present in the region i.e. Ultratech & Jaypee Cement. Their ash requirement is much less than UPRVUNL's ash generation,
- There are no major road construction or development projects in the region where ash can be utilised,
- There are no abandoned coal mines allotted to UPRVUNL for back filling of ash.

This framework and guidelines in this policy shall enable Anpara and Obra Power Stations in identifying avenues for better ash utilisation.

### **Need for the Ash Utilisation Policy**

Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited (UPRVUNL) is poised to become one of the largest state owned power generating companies in the country with an installed capacity of approx. 12000 MW by FY 2022. With this installed capacity, UPRVUNL expects huge quantum of ash generation every day and every year.

Ministry of Environment, Forest and Climate Change (MoEF&CC) via a gazette notification published Fly Ash Notification of 14.09.1999 directing thermal power stations to utilise 100% of the fly ash generated. Further amendments to this notification were notified on 03.11.2009 and 25.01.2016 which directed for creation of Ash Fund and ways for 100% ash utilisation. In order to comply with these notifications, a comprehensive ash utilisation policy is needed to be framed for the implementation of directives issued by the ministry. This policy shall guide UPRVUNL stations for utilisation of 100% ash.

### **Objectives of the Ash Utilisation Policy**

- Considering ash utilization as an Immanent process in Power generation.
- Carrying out activities for 100% ash utilization on sustainable basis.
- Facilitating convenient ash collection for appropriate utilization.
- Increasing fly ash /bottom ash/ pond ash utilization at UPRVUNL power stations and improving ash business process.
- Identifying potential avenues of ash utilization in the vicinity.
- Utilization of ash through departmental actions or other actions by:
  - Facilitating manufacture/ increasing production of fly ash bricks/ blocks/ tiles/ Light weight aggregate, etc. for utilization and their marketing for sale,
  - Utilizing ash and ash based products in own construction / upkeep works within the power station.
- Increasing revenue realization from sale of fly ash, and utilization of this revenue for promotional, infrastructure development and facilitation activities for increasing ash utilization at UPRVUNL station till 100% ash utilization is achieved at each station.
- Increasing public awareness for acceptance for ash and ash based products by wide publicity of merits of ash and ash based products and demerits/ environment hazards of clay/ bricks.
- Promoting studies for finding out and evolving innovative methods of ash utilization.

### **Scope of the Ash Utilisation Policy**

This policy shall encapsulate all existing coal based power stations/ units of UPRVUNL and also the future coal based power stations/ units. The Scope of the policy consists of:

- i. Utilisation of ash by back filling of mines, stone quarries or development of low lying areas.
- ii. Making dry fly ash available with suitable loading system including mechanical loading in tankers/ railway wagon/ bulkers/ bags for issue to users/ industries/ traders etc.
- iii. Utilization of bottom ash & pond ash in the vicinity of UPRVUNL Stations.
- iv. Providing various facilities, incentives, and encouragement to prospective entrepreneurs/ industry for production and marketing of cement/ light weight aggregate/ light weight sand/ ash bricks/ blocks/ tiles/ concrete, etc.
- v. Production, transportation, marketing and sale of ash.
- vi. Enhancing revenue realization from harvesting, collection and sale of cenosphere through ash pond auction.
- vii. Utilization of fly ash, bottom ash, pond ash and ash based products within UPRVUNL for in-house construction/ upkeep activities.
- viii. Launching an advertisement campaign to build awareness on the beneficial utilization of ash such as use of fly ash in cement/ light weight aggregate/ light weight sand/ mortar, use of ash bricks/ blocks/ tiles, use of bottom ash as substitute of sand, etc.
- ix. Promoting studies and R&D activities for developing innovative methods for new areas of ash utilization and for development of better & cost effective ash based products.
- x. Administrative and financial aspects including budget, delegation of power, etc.

### **Preparatory Activities for Ash Utilisation**

The following activities shall be done at preparatory stage for ash utilisation at all Stations:

### **Formation of Ash Management Committee**

Head of Project at each Station shall form an Ash Management Committee for effective utilisation of ash generated at the power stations. The Ash Management Group shall consist of the following officers at each Station:

1. Chief Engineer (Administration) / Head project - Head of Committee
2. S.E. (Nodal Officer of Environment and Ash Management) - Member
3. Dy. CAO - Member
4. Executive Engineer (Ash Utilisation Division) - Member and Coordinator

The above Committee shall have a fortnightly meeting to discuss the matters of environment and ash utilisation and the report of the same shall be forwarded to CE (E&S), Head Quarter for resolving issues, if any.

### **Ash Collection, Storage and Weighing System**

- i. UPRVUNL envisages to set up a mechanism of full fly ash collection in dry form and suitable storage system.
- ii. UPRVUNL shall install its own Dry Fly Ash Extraction System (DFAES) at all its power plants or take on lease from other users, on long term contract basis.
- iii. UPRVUNL shall facilitate for loading of fly ash into tankers/ railway wagons/ bulkers/ bags from silos
- iv. UPRVUNL shall create a provision for loading of fly ash into tankers/ railway wagons/ bulkers/ bags from silos.
- v. UPRVUNL shall facilitate increased and easy off take of fly ash at existing TPS by widening/ strengthening of road, creating new approach road, modification in silo for pneumatic loading of fly ash in tankers/ jumbo bags, etc. This activity shall be financed from Ash Fund created as per directives of MoEF&CC.
- vi. UPRVUNL envisages to develop a standard layout for ash evacuation system for all future TPS, indicating facilities near each silo such as access road for easy movement of bulker/ larger capacity truck, railway line (if possible) for wagon loading, compressed air for cleaning, service water, staff rooms, weighing facility, type of weigh bridge and number of weigh bridge to be installed for weighing empty and filled bulkers/ tankers/ so that the ash filled truck/ bulker/ tanker/ wagons, etc can exit from plant in a minimum possible time.
- vii. UPRVUNL shall issue pond ash to users for construction of roads & embankments, structural fills, etc. on free of cost basis in line with MoEF&CC notification.

### **Development of Ash User Data Base**

Creation of an ash user database shall help UPRVUNL reach out to several potential ash users for enhanced marketing and sale of ash and ash based products.

- i. In order to develop an ash user database, each UPRVUNL station shall issue a notice in regional newspapers inviting all ash users like cement manufacturers, ash brick manufacturers, other ash based entrepreneurs, traders and other potential ash users to register with UPRVUNL in a proforma having details of their area of activity, capacity, quantity of ash required, location details, email ID, telephone/ mobile number, address and other details.
- ii. Further, online web portal of UPRVUNL stations shall also be developed for periodic updation of ash user database on UPRVUNL website. The updation and maintenance of data base shall be done by a representative nominated by Head of Project of respective Station.

### **Publicity/ Awareness**

To create public awareness on the beneficial uses of fly ash in cement, light weight aggregate, light weight sand, use of bricks/ blocks/ tile, use of bottom ash & pond ash, an aggressive awareness campaign shall be carried out by stations through advertisement,

local newspapers, magazines, cinema halls, public places etc. so as to generate demand for fly ash, bottom ash and pond ash and thus increasing ash utilization.

UPRVUNL's achievements and activities on ash utilization shall be disseminated through publicity, media coverage, etc. at Corporate as well as Site levels. The expenses for this activity shall be met from the Ash Fund.

## **Ash Utilisation Avenues- Other than Sale to Cement Industries**

### **1. Issue of fly ash to brick/ blocks and tiles manufacturers**

- i. As per the Gazette notification dated 03.11.2009 issued by MoEF&CC, at least 20% of dry (ESP) fly ash or any quantity issued time to time, shall be made available "free of cost" basis to units manufacturing fly ash or clay-fly ash bricks, blocks and tiles on a priority basis over other users.
- ii. If the demand from such agencies falls below 20% of quantity, then in accordance with MoEF&CC Gazette Notification dated 25.01.2016, such balance quantity of dry fly ash shall be tied up with the end users/ agencies/ traders/ cement companies/ light weight aggregate industries/ light weight sand industries, etc on discovered price up to 12 months period and it should be reviewed based on the subsequent demand of fly ash by brick, block, tiles manufacture on regular basis or as and when required.
- iii. Credentials of the agency should be checked before free issue of fly ash, to ensure that agency is actually the ash brick/ block/ tile manufacturer and the ash is taken for bricks, block and tiles manufacturing only and not for sale as a trader.
- iv. The dry fly ash issued "free of cost" should be used only for manufacture of fly ash bricks, clay-fly ash bricks, blocks and tiles and no dry fly ash should be issued to defaulter units.
- v. In case, the dry fly ash issued on "free of cost" basis to such manufacturer of ash bricks/ blocks/ tiles has not been utilised for these purposes but sold in the market, permission given for lifting of fly ash to such agency should be terminated and such agency shall be banned for doing business dealing with UPRVUNL.
- vi. As per MoEF&CC amendment of 25.01.2016, "the restriction to provide 20% of dry ESP fly ash free of cost shall not apply to those thermal power plants which are able to utilise 100% fly ash in the manner prescribed in the notification." However, if a Station has made an MoU/ Agreement to provide 20% fly ash free of cost to any agency, and is able to sell more than 80% fly ash at a later date, it shall negotiate to provide ash to such free off-taking agency by offering at least 30% discount on the discovered price for sale of ash.

### **2. Low lying area development**

- i. In order to increase ash utilization at UPRVUNL stations, low lying area development or reclamation of low lying areas inside of Stations premises and construction of all embankments and roads within UPRVUNL Stations shall be done with the use of ash, wherever feasible and financed through Ash Fund.



- ii. All low lying area development outside of Stations may be taken up using ash and financed from Ash Fund in consultation with concerned individuals/ agencies and with consent of regulatory authorities/ District authority/ Municipal Corporation, etc.
- iii. Stations shall contact higher officials of Municipal corporation/ District Magistrate for identification of location/ place for filling up of low lying area with pond ash/mound ash.
- iv. After back filling of ash, the top layer of ash shall be protected with earth cover to prevent any fugitive ash.
- v. The above activities shall be carried out in accordance with the CPCB 2019 "Guidelines for disposal/ utilisation of Fly Ash for reclamation of Low Lying Areas and in stowing of Abandoned mines/ Quarries." The entire work such as filling of ash/ earth cover/ watering/ compaction, etc. for completion of the work shall be done as per CPWD/ PWD specifications.

### 3. Ash filling in Stone quarries

- i. The Stations shall make all efforts to identify in their vicinity, abandoned stone quarries or quarries where stone extraction shall be completed soon. The Stations shall contact the local District administration/ mining officer to get abandoned stone quarries allotted to the Stations for filling of ash. This activity of reclaiming the abandoned stone quarries shall be financed from Ash Fund, if available, otherwise can be financed from O&M cost
- ii. As per various researches, it has been found that filling ash in stone quarries is a normal and accepted way of levelling the area without any harmful effects to the environment.
- iii. However, the Stations shall conduct the following study prior to taking up ash disposal activity in the voids to ensure no change/ damage deterioration in water quality and hydrology in and around the proposed area:
  - Ash characterisation and leachate study
  - Techno economic feasibility study for disposal of ash into the quarry
  - Topographical survey mine void area
  - Geotechnical study of the mine void area
  - Pre and post filling mine water quality including leach-ability of metals.
- iv. After back filling of ash, the top layer of ash shall be protected with earth cover and such land shall be handed over to the district administration for developmental or any other activity as deemed fit by the district administration.
- v. These works shall be carried out in accordance with the CPCB 2019 "Guidelines for disposal/ utilisation of Fly Ash for reclamation of Low Lying Areas and in stowing of Abandoned mines/ Quarries." The entire work such as filling of ash/ earth cover/ watering/ compaction, etc for completion of the work shall be done as per CPWD/ PWD specifications.

#### 4. Mine Filling/ Stowing (Opportunity for Pit-Head Stations)

- i. All efforts shall be made to identify abandoned coal mines nearby Stations for back filling the same with ash. Ministry of Coal and MoEF&CC are being pursued for allotment of abandoned coal mines to UPRVUNL for back filling of ash. This activity of back filling of ash shall be financed from Ash Fund, if available, otherwise can be financed from O&M cost.
- ii. As per various researches, it has been found that ash can successfully be back filled in coal mines without any hazards or challenges.
- iii. The Stations shall conduct the following study prior to taking up ash disposal activity in mine void to ensure no change/ damage deterioration in water quality and hydrology in and around the proposed area:
  - Ash characterisation and leachate study
  - Techno economic feasibility study for disposal of ash into the quarry
  - Topographical survey mine void area
  - Geotechnical study of the mine void area
  - Pre and post filling mine water quality including leach-ability of metals.
- iv. After back filling of ash, the top layer of ash shall be protected with earth cover and such land shall be handed over to the Coal India Limited.
- v. All above activities shall be completed in accordance with the Central Pollution Control Board (CPCB) 2019 "Guidelines for disposal/ utilisation of Fly Ash for reclamation of Low Lying Areas and in stowing of Abandoned mines/ Quarries." The entire work such as filling of ash/ earth cover/ watering/ compaction, etc for completion of the work shall be done as per CPWD/ PWD specifications.

#### 5. Ash supply to Govt. Asset creation firms and projects

- i. In order to increase ash utilization and achieve ash utilization targets set up by MoEF&CC, Stations may consider for sharing / bearing the transportation cost of fly ash/ pond ash for NHAI/ Govt. projects as per prevailing directives. Such activity shall be financed from Ash fund.
- ii. UPRVUNL shall request both Govt. and Public & Private Construction agencies at Central and State levels such as CPWD, PWD, NHAI, NBCC, etc to use fly ash based building products like fly ash based bricks, blocks, tiles etc. especially in construction works within a radius of 300 km of any coal/ lignite based thermal power station as mandated in MoEF&CC's Notification of 25.01.2016.
- iii. UPRVUNL shall transport ash to such construction agencies in accordance with MoEF&CC notifications.

#### 6. Use of ash for Agriculture purpose

It is established that use of fly ash in agricultural activities improves physical properties of soil, provides micro nutrients such as Fe, Zn, Cu, Mo, Mn, etc and macro nutrients like K, P, Ca, Mg, etc. and reduces pest incident which help to increase crop yield by 15-40%.

Stations shall establish contact with farmers' associations, gram panchayats, etc and encourage them to use fly ash in their fields. Supply of pond ash to farmers' field for use

of ash in agriculture purpose, within 25 km from ash pond, shall be carried out by UPRVUNL station and financed from Ash Fund.

## **7. Infrastructure development at Power Stations**

To encourage, promote and utilize fly ash/ bottom ash and pond ash/ mound ash following activities shall be undertaken by stations:

- i. Use of fly ash in cement concrete, plastering, mortar works (as a part replacement of Ordinary Portland cement) shall be undertaken by UPRVUNL projects/ station (subject to meeting all technical requirements and provisions in BIS code). For this, necessary provision should be made in specifications/ drawings, tender documents and Bill of Quantities.
- ii. Bottom ash shall be used as a replacement of sand (filter material) in ash dyke construction works as per specification. Stations should explore possibility for use of bottom ash as replacement of sand in cement concrete/ mortar and fly ash brick/ blocks/ tiles manufacturing subject to meeting all technical requirement and provisions in BIS Code.
- iii. In line with provisions of MoEF&CC gazette notification dated 03.11.2009, fly ash based products such as Fly ash brick/ tile/ block shall be exclusively used in plant as well as township construction works. For this, necessary provisions should be made in tender document, specifications and bill of quantities.
- iv. Raising of ash dykes at existing power plants shall be done through use of ash.
- v. Construction of new roads (including bridges/ culverts), approach roads adjoining fly ash storage silos/ ash dykes, paving of areas adjoining weigh bridge, brick plant, railway siding, fly ash silo area etc. shall be taken up to facilitate fly ash utilization.
- vi. Repair/ upgrading/ strengthening/ widening of existing road, approach roads adjoining fly ash silos, ash dyke or other roads shall be taken up to facilitate ash utilization.
- vii. Wherever feasible, laying of railway track under the ash silo and in-motion/ static weighing facility shall be carried out so that fly ash can be loaded directly on railway wagon for bulk transportation of ash.
- viii. These works shall be financed from Ash Fund.

## **Invitation of tenders/EOI for Ash Utilisation**

### **1. Sale of Ash**

UPRVUNL has published advertisements in newspapers for reaching out to cement and brick manufacturers for sale of ash from time to time. The following ways need to be adopted for an aggressive ash sale approach:

- i. A vigorous marketing/ advertisement campaign shall be started by all UPRVUNL stations in local newspapers, journals, cinema halls, schools, public places,

signboard, notices, etc and at various other places in vernacular language to create awareness on the beneficial utilization of ash.

- ii. The Thermal Power Stations in association with UPRVUNL HQ should also organize ash users meet for detailed discussions on the issues/ constraints in utilization of ash and to understand their suggestions/ difficulties for enhancing utilization of ash. In this meet, representative from all nearby cement industries, asbestos industries, RMC plants, light weight aggregate manufacturers, light weight sand units, ash bricks/ blocks/ tiles manufacturers, traders, existing users, etc shall be invited.
- iii. A marketing team consisting members from Ash Utilisation Division and Finance department of stations shall be constituted by the Head of Project at each Station. The coordinator of this team shall be the member of the Ash Utilisation Division. This team shall work out the demand for sale of fly ash to cement manufacturers, RMC units, light weight aggregate, other industries, etc. Based on the demand, potential of fly ash which can be sold to cement, RMC and other ash based industries shall be worked out. If required, a consultant can also be appointed to get the realistic picture of the market for the ash and ash based products along with constraints and solutions.
- iv. The quantity of fly ash sale to cement industries, RMC Industries and other ash based products units, etc. should be worked out on the basis of the market survey for demand for fly ash etc. and total dry fly ash availability at fly ash silo (keeping 20% of total fly ash produced or as per MOEF gazette notification issued from time to time as reserve quantity for bricks/ blocks tiles). As per latest MoEF&CC notification *"the restriction to provide 20% of dry ESP fly ash free of cost shall not apply to those thermal power plants which are able to utilise 100% fly ash in the prescribed manner"*
- v. The price band for book building process will be worked out by the same Committee considering the market price for fly ash in the vicinity including fly ash sale price in the last contract of the station, if available, transportation/ landed cost of fly ash 'to end users' for maximizing the fly ash utilization.
- vi. Sale of fly ash should be for the total demand assessed by the team/ quantity of dry ash available at silo (whichever is less) through book building process. For sale of fly ash, E-tendering through book building process should be adopted. E-tendering shall either be done by each Station by engaging external agencies like MSTC/ M-Junction, etc. so as to have a better price realization through competitive bidding.
- vii. After successful bid/ sale of fly ash quantity to end users, traders, etc. if a balance fly ash quantity remains available at silo (after above process and reserving 20% fly ash for brick/ blocks and tiles manufacturers or as per MOEF gazette notification issued to time to time), balance available Fly ash quantity may be issued to any other interested agencies on discovered/ prevailing price (after inclusion of price adjustment, if applicable, on the discovered price in subsequent years) on first come first serve basis.
- viii. Stations where presently there is a large demand for fly ash such as Harduaganj, Parichha, Panki etc. the practice of sale of fly ash through book building process and e-tender will be followed without conducting of any fresh market survey.

- ix. The contract period for sale of fly ash on discovered price may be kept between 12-36 months with a price revision clause based on cement price index after every 12 months. These contract agreements should have well defined termination clause, if the actual lifting of fly ash quantity goes below 80% of awarded/ adjusted quantity in any consecutive 3 months on cumulative basis. Price Revision Clause shall be defined in General Terms and Conditions.
- x. The un-lifted/ balance available fly ash quantity, if any, may be issued to any other interested agencies on prevailing price on first come first serve basis with display/ notices at Station along with information on UPRVUNL website on regular basis.
- xi. If the lifting of fly ash is reduced considerably (below 60% of available quantity at fly ash silo/ tied up quantity) due to increased availability of fly ash in the vicinity/ any other reason, fresh bid shall be invited after a book building process for revision of price to enhance fly ash utilization.
- xii. Stations may sign MoU/ Agreement with end users/ cement industries, Light weight aggregate/ sand industries, RMC plants units, etc for issue of fly ash on long term basis with a condition that fly ash will be issued on prevailing price + price revision based on cement price index after every year or on discovered price at that station, as and when applicable, along with price revision on yearly basis; and with well-defined termination clause, if the actual lifting of fly ash quantity goes below 80% of awarded/ adjusted quantity in any consecutive 3 months on cumulative basis.
- xiii. Format for MoU/ Agreement shall be developed by Head of the Project with the help of Dy. CAO of respective Station. Such MoU should be submitted to CE (E&S) for getting vetted from the Legal Department of HQ. On approval of Board of Directors this MoU shall be signed between the Head of Project and the Agency.
- xiv. If agencies approach the station specially for fine fly ash, the station may tie-up with such interested users/ agencies through e-tender process based on highest quoted price (but not less than the discovered price for normal fly ash) and accordingly arrangement for collection of fine fly ash in a separate silo should be done for issue on price wherever feasible.
- xv. All monetary receipts from sale of ash at various Stations shall be transferred to the UPRVUNL HQ. This amount shall then be deposited under the separate account head created with the name of "Ash Fund".

## **2. Auction of ash pond for collection and sale of Cenospheres**

The following guidelines for auction of ash pond for collection and sale of cenosphere shall be adopted:

### Framework for Bidding

- i. Ash pond(s) are to be auctioned through bidding process.
- ii. Bids shall be invited through an open tender by following the tendering process of single stage two sealed envelopes (one containing techno commercial bid and other envelope containing the price bid).
- iii. Reserve price for a station should be mentioned in the bidding document.
- iv. Participating bidder shall meet the specified qualifying requirement.

- v. The party quoting the highest price equal to or above the reserve price shall be awarded the contract. If highest price quoted is below the reserve price, the tender will be considered unsuccessful.
- vi. Duration of contract shall be for a period of one year.
- vii. Pond shall be auctioned on as is where basis without any assurance of quantity or quality of cenosphere available in the pond.

Reserve Price

- δ. Reserve Price (RP) shall be determined by Committee consisting of concerning Chief Engineer/ head of Project, concerning Superintending Engineer, Ash Utilization Division and Dy. CAO of Power station.
- ii. It is proposed to consider a consultant's report initially for assessing the quantity of cenosphere to be generated for arriving at the reserve price i.e. 'Cenosphere quantity to be calculated @ 0.01% to 0.02% of the quantity of ash discharged at ash pond starting initially with 0.01% of the fly ash quantity (discharged) in the ash pond'.
- iii. The basic formula proposed for determination of Reserve Price (RP)/annum is:  
$$\text{RP/ annum} = 0.9 * (0.01\% * \text{Average Quantity/annum of fly ash expected to be discharged during the period of proposed contract in the ash pond}) * \text{latest selling price of cenosphere at UPRVUNL station,}$$

Wherein,

The quantity of fly ash/ annum expected to be discharged during the period of proposed contract in the ash pond shall be provided by respective stations.
- iv. In case new unit(s) is/ are scheduled for commissioning during the proposed contract period, fly ash quantity shall be considered accordingly. The RP shall be reduced to 90% to take care of collection/ harvesting/ overhead charges, etc. as last selling price of cenosphere (which does not include the harvesting and overhead charges) has been considered for RP calculation.
- v. In case tender is unsuccessful with the above RP formula, the RP may be reviewed by the Committee, taking into account the following factors for a re-tender:
  - a) Capacity /age of the plant / station
  - b) Condition of the ash pond(s)
  - c) Cenosphere collection history, if any
  - d) Quotations received in the unsuccessful tender
  - e) Any other relevant information.

All monetary receipts from ash pond at the Stations shall be transferred to the UPRVUNL HQ. This amount shall then be deposited under the separate account head created with the name of "Ash Fund".

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## Other Avenues for Ash Utilisation

### 1. Financial Incentive for Ash utilization from Pithead Stations

UPRVUNL is in the process of designing an Incentive scheme for lifting and transportation of fly ash to cement manufacturers, RMC plants, Asbestos cement products manufacturing units from Ash Fund or O&M fund (if Ash Fund is not available).

- i. The rates of incentives and terms and conditions for offtake of ash shall be worked out by the Ash Management Committee of Station with approval of the Head of Project. Committee shall work out the following parameters:
  - a) Fly ash disposal cost from ESP to ash dyke.
  - b) Fly ash transportation cost from ESP to fly ash Silo.
  - c) Average cost of Ash utilization in low-lying area development incurred by station in recent years (including loading, transportation, unloading, compaction, soil cover, etc).
  - d) Cost of transportation of Fly Ash being incurred by Cement companies from other power plants in the vicinity.
  - e) Analysis of incentives, if any, being given by other TPS in the vicinity to Cement and other Industries for offtake of fly ash.
- ii. Based on the above details, the Committee shall work out proposed rate of incentive per tonne of fly Ash, which may be offered to cement manufacturing, RMC and Asbestos Cement products manufacturing units.
- iii. The rate of Incentive will be reviewed by Head of Project every year.

### 2. Facilities and Incentives

- i. Concerted efforts will be made by stations to propagate UPRVUNL's intention and desire to motivate prospective entrepreneurs/ industries to come forward with various schemes for ash utilization.
- ii. Wherever considered necessary and feasible, appropriate technical/ managerial assistance and marketing information would be provided by UPRVUNL to entrepreneurs to identify such schemes.
- iii. If required, UPRVUNL may render necessary help and assistance to entrepreneurs for facilitating procurement of land, supply of electricity, water, etc from concerned authorities.
- iv. Wherever feasible, UPRVUNL may provide access to railway siding on chargeable basis for movement of railway wagons for fly ash loading at UPRVUNL's silos and transportation.
- v. Railway siding facility may be extended to the user /entrepreneurs in a limited manner and wherever it is so extended the Stations shall ensure that the requirements of the UPRVUNL units always have precedence and suitable provision to this effect shall be made in the Agreements/ contract.

### 3. Facility to Bulk Transporter of Fly Ash

UPRVUNL Stations may provide facility of railway siding and loco for shunting of rake on free of cost basis for initial three years for loading of fly ash through silos. This period may be reviewed at the end of three years.

### 4. Identifying new areas of ash utilization

- i. Wherever there are existing burnt clay brick making units near/ around power stations, necessary techno-managerial assistance shall be extended by Station authorities to promote use of ash in making of ash bricks.
- ii. As per various studies, it has been found that ash can be used in manufacturing the following products:
  - Cellular Concrete Products
  - Concrete and mortar
  - Fly Ash based light weight Sand
  - Fly Ash based Geo-Polymer Concrete
  - Asbestos
  - Controlled Low Strength Fill Material (CLSM)
  - Fertilizer
  - High Density Poly Ethylene (HDPE)
  - Floor & Wall Tiles
  - Refractory bricks
  - Ceramics
  - Manufacture of Alum and paint
  - Domestic cleaning powder
- iii. The Stations shall make efforts to identify such industries in their vicinity and inform and encourage them to utilise ash in their production process. Any funding required for promoting the use of ash based products shall be met through Ash Fund.

### 5. Other activity

- i. Any other activity in connection with improvement of ash utilization/ directives of regulatory authority/ State Government leading to ash utilization and environment improvement may be taken up with specific approval of UPRVUNL HQ on case to case basis through Ash Fund.
- ii. Ash dyke which has been filled up with ash to its capacity and declared abandoned, area of such ash dyke may be used for Installation of solar panels for Solar Power Plant or development of parks, other facilities, as deemed fit.
- iii. In order to take up research activities for enhancing ash utilization and develop new areas of ash utilization, Research and Marketing centre/ institute shall be set up at Anpara TPS from Ash Fund.
- iv. UPRVUNL will also take advice for more utilization ideas from reputed institute such as IITs and others.



## Ash Fund

- i. In line with stipulations of MOEF's gazette notification dated 03.11.2009 & 25.01.2016, the amount collected from sale of fly ash and fly ash based products, cenospheres, etc by all UPRVUNL's power stations shall be deposited in a separate account head – "Ash Fund" which will be maintained at Finance department at HQ for accounting, disclosure and allocation purposes.
- ii. This fund shall be allocated for development of infrastructure/ facilities. Activity wise proposals from thermal power stations shall be submitted to UPRVUNL HQ for allocation of fund from the Ash Fund.
- iii. The amount collected in the Ash Fund shall be utilised as per requirement of Project and for achieving 100% ash utilisation in the manner as elaborated below.
  - A. The budget/amount of this Ash Fund shall be allocated for:
    1. Development of Infrastructure/facilities
    2. Promotional Activities
    3. Facilitation activities
    4. Other Expenditures
    5. Administrative and Other expenditures
    6. Other development programme of the stations.

The lists of the activities are:

1. Development of Infrastructure/facilities: The activities which will be funded from Ash Fund under this head are:
  - i. Construction of new roads (including bridges/culverts), approach roads adjoining of fly ash storage silos/ ash dykes, paving of areas adjoining weigh bridge, brick plant, railway siding, fly ash silo area etc. to facilitate fly ash utilization.
  - ii. Buying of rakes/ locomotive for transportation of fly ash.
  - iii. Setting up of classifiers for segregation of fly ash into different grades and hydra bin for separation of bottom ash.
  - iv. Retrofitting of DFAES for the plants whose design life is over i.e. beyond 25 years.
  - v. Procurement & Installation of weighbridge for weighment of fly ash.
  - vi. Setting up of ash bricks or other ash based products manufacturing plants.
  - vii. Fly ash bagging facility.
  - viii. Fly ash storage capacity addition by installation of additional silos.
  - ix. Creation of Eco-Park.
  - x. Preparation of ash utilization master plan including landscaping and plantation at each site.
2. Promotional Activities: List of activities funded from Ash Fund under this head are:
  - i. Expenditure towards low lying area development using ash inside as well as outside of UPRVUNL premises within 300 Km of UPRVUNL sttions (including cost of excavation, loading transportation, compaction, cost of soil cover, support structure necessary for ash filling as one activity).
  - ii. Expenditure towards demonstration projects for use of ash:

- a) excavation loading and transportation of ash by trucks/ dumpers in backfilling of open cast mine/ stowing of underground mine
  - b) construction of rail embankment
  - c) road construction
  - d) wasteland development
  - e) development of infrastructure for mine stowing/ filling
  - f) use of ash bricks/ other ash based products
  - g) Expenditure for loading of pond ash for enhancing ash utilization.
- iii. Expenditure towards cost of transportation for supply of pond ash to farmers' fields.
  - iv. Expenditure on transportation of fly ash/ bottom ash/ pond ash to other agencies to enhance ash utilization.
  - v. Expenditure on manufacture of ash bricks/ other ash based products.
  - vi. Research studies, consultation charges, testing charges etc. for ash utilization activities.
  - vii. Promotional activities such as workshop/ seminars/ training/ awareness programmes, advertisement, making documentary film, printing of brochure, booklets etc. for ash utilization activities.
3. Facilitation activities: The activities which will be funded from Ash Fund under this head are:
- i. Repair/ upgrading/ strengthening/ widening of existing road, approach roads, adjoining of fly ash silos, ash dyke or other roads to facilitate ash utilization.
  - ii. Construction of pavement of parking areas for fly ash trucks/ tankers/ bulkers parking, rest rooms and civil amenities for truck/ tankers/ bulkers drivers, helpers.
  - iii. Expenditure in construction of Eco-park for enhancing ash utilization.
  - iv. Repair and maintenance of infrastructures/ facility developed for ash utilization.
4. Other Expenditure: Any other expenditure in connection with improvement of ash utilization leading to environment improvement, afforestation, economical power etc.
5. Administrative and other expenditures: Expenditure towards administrative and other expenditures, marketing of ash and ash based products, outsourced manpower by UPRVUNL for – Ash Utilization works, taxes and duties, printing, EDP, office equipment, furniture and fixtures, rent etc.
6. Other Development programme: As long as 100% ash utilization levels are maintained, the thermal power station would be free to utilize amount collected for other development programmes.
- B. Expenditures which will not be considered from Ash Fund are:
- i. Expenditure on infrastructure activities i.e. (a) installation of DFAES at UPRVUNL's new projects (b) raising of ash dykes, etc.

- ii. Capital intensive schemes for back filling of mines shall not be taken up from Ash fund. However, in special circumstances such schemes may be considered from ash fund on specific approval of competent authority i.e. MD, UPRVUNL.
- iii. Any capital expenditure which may be allowed under the extant tariff regulations by UPERC will not be met out from Ash Fund. To ensure this capital items identified in the budget proposals by each station shall be got verified from Commercial dept at HQ.
- iv. Care may be taken that "Ash Fund" is utilized for "Promotional activities" at paragraph 2(i) & (iv) only for disposal of ash beyond the contracted quantities offered for sale to different agencies at operating stations.

### **Terms and Conditions for contracts/ agreement**

General Terms & Condition and Special Terms & Conditions for tendering sale of ash and ash based products or establishment of facilities for manufacture of ash based products shall be prepared by Stations in association with Finance and Legal cell at HQ.

For all projects which require establishment of a manufacturing facility for ash based products and need funding from the Ash Fund, a cost benefit analysis covering financial and economic benefits for the society as well as UPRVUNL shall be conducted by the Stations. The cost benefit analysis shall inter alia contain Net Present Value, IRR and Payback Period of the project. This analysis shall be shared with UPRVUNL HQ for its vetting and approval for funding of the project.

### **Compliance of MoEF&CC notifications**

- i. This ash utilisation policy empowers Heads of Projects in all aspects of ash utilization and makes them responsible for compliance of all guidelines issued by MoEF&CC, Central & State Pollution Control Board and other statutory bodies. Heads of projects are also responsible and answerable for achieving targets set by MoEF&CC for ash utilization.
- ii. CE(E&S) shall monitor and guide the implementation of this policy to ensure ash utilization as per MoEF&CC guidelines and targets.

#### **Note:**

1. This Ash Utilisation Policy shall supersede all previous policies, circulars, office orders, memorandums, etc if any, for ash utilisation.
2. This policy shall be reviewed as per requirement or as per directive of any instrumentality of Government of India, Government of Uttar Pradesh, National Green Tribunal, etc.