INTEGRATED POWER DEVELOPMENT SCHEME (IPDS)

Review of SCADA /DMS Implementation

16 Oct 2017
Venue – Power Finance Corporation Ltd, New Delhi
SCADA - Progress at a Glance
PHYSICAL PROGRESS OF RTU & FRTU INSTALLATION

<table>
<thead>
<tr>
<th>SCADA Impl Agency (SIA)</th>
<th>States (No of towns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schneider</td>
<td>JK (2), BR(1), KL3)</td>
</tr>
<tr>
<td>Dongfang</td>
<td>TN (7), RJ (5), MP(5), OD (2), JH (3), PY(1)</td>
</tr>
<tr>
<td>Siemens</td>
<td>MH(8), UK(1), PB(3)</td>
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<tr>
<td>Chemtrols</td>
<td>GJ(6), AP(4), TG(2), WB(3), AS(1)</td>
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<td>Alstom (GE)</td>
<td>CG(2)</td>
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</table>
PHYSICAL PROGRESS OF RTU & FRTU End to End tested

<table>
<thead>
<tr>
<th>States</th>
<th>RTU</th>
<th>FRTU</th>
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<tbody>
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<td>All India</td>
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<td>End to End tested</td>
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<tr>
<td>End to End tested</td>
<td>6816</td>
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</table>
FINANCIAL PROGRESS ( % AMOUNT DISBURSEMENT /SANCTION )

States------>

- Schneider
- Dongfang
- Siemens
- Chemtrols
- Alstom -GE

SIA (SCADA Imp Agency)
SALIENT POINTS
FOR
COMPLETION OF SCADA PROJECTS
BY MAR 18
Salient points for SCADA implementation

- **Deadline for completion of projects by Mar 18**

- **Keep system TPIEA-IT (SCADA) verification ready**
  - Successful completion of Site Acceptance test (S.A.T)
    - Field installation test, end to end test & performance test
  - Successful completion of System Availability test
  - Keeping all changes approved incl LoA amendment if reqd
  - Keep all approved documents /change orders available
  - Keep contract & System live

Model TPIEA –IT (SCADA) document is available on IPDS portal under > Model documents > TPIEA –IT REPORT
Salient points for SCADA implementation

Common Advisories

• Set-up dedicated SCADA team for project implementation as well as Control centre operations and field activities.

• Expedite installation of SCADA enablers RMU, Sectionlizer, FPIs and keep Substation SCADA ready.

• Do & expedite progressive end to end testing for RTU / FRTU and ensure timely and progressive payments as per milestones for proper cash flow.

• Facilitate GIS based DMS data to SIA.

• In case of delay in SCADA enabler, utility may submit part B closure w/o SCADA enablers and closure of SCADA enabler separately later.
Salient points for SCADA implementation

- Ensure proper connectivity of network with NBSP
- Get feeder and town-wise daily /monthly SAIFI/ SAIDI Reports generated from SCADA.
- Timely Outage for commissioning shall be provided
- Functioning of SCADA of completed/ commissioned RTU/FRTU by deployment of Manpower (States such as TN & Maharashtra have led the way).
- Network security / Cyber security standard compliance by CERT.IN empanelled agencies

Advisories are without prejudice to terms and conditions and scope of Contract between SIA and utility
STATE-WISE REVIEW
TAMIL NADU
TN (7 towns – Chennai, Madurai, Coimbatore, Tirupur, Salem, Trichy, Tirunelveli)

SANC DATE: Dec 10
AWARD DATE: Oct 11

RTU Progress

- S/S
- RTU Installed
- RTU(E to E)
- Comm

FRTU Progress

- RMU+Sect
- FRTU Installed
- FRTU(E to E)
- Comm

Cash flow

- Rs Crs
- sanctioned
- awarded
- disbursed by PFC
- released by utility

Values:
- SANC DATE: Dec 10
- AWARD DATE: Oct 11
- RTU Progress: 243 243 243 242
- FRTU Progress: 4572 4562 4562 4405
ISSUES

- TPIEA-IT (SCADA) Verification to be done
- DMS of Chennai, Tirupur pending (SAT for other 5 towns done)
- IT Integration to be done
MP West – Indore & Ujjain

**SANC DATE:** Mar & Jun 11  
**AWARD DATE:** Dec 11

**RTU Progress**

- **S/S:** 92%
- **RTU Installed:** 92%
- **RTU (E to E):** 92%
- **Comm:** 92%

**FRTU Progress**

- **RMU + Sect:** 4%
- **FRTU (E to E):** 0%
- **Comm:** 0%

**Cash flow**

- **Sanctioned:** 34.11 Rs Crs
- **Awarded:** 18.32 Rs Crs
- **Disbursed by PFC:** 13.59 Rs Crs
- **Released by utility:** 13.06 Rs Crs
**MP East – Jabalpur**

<table>
<thead>
<tr>
<th>SANC DATE: Mar &amp; Jun11</th>
<th>AWARD DATE: Dec 11</th>
</tr>
</thead>
</table>

**RTU Progress**

- **S/S**: 39
- **RTU Installed**: 36
- **RTU(E to E)**: 31
- **Comm**: 31

**FRTU Progress**

- **RMU+Sect**: 53
- **FRTU(E to E)**: 1
- **FRTU Installed**: 0

**Cash flow**

- **Rs Crs**:
  - Sanctioned: 16.56
  - Awarded: 11.98
  - Disbursed by PFC: 7.57
  - Released by utility: 6.59

*Graphs showing progress and cash flow for MP East – Jabalpur.*
FRTU work to be expedited
Communication to be made stable in all towns by NBSP
SAT & Availability test (Date not given)
RAJASTHAN
Rajasthan – Jaipur

SANC DATE: Jun 10

RTU Progress

- S/S
- RTU Installed
- RTU(E to E)
- Comm

FRTU Progress

- RMU+ Sect
- FRTU Installed
- FRTU(E to E)
- Comm

Cash flow

- sanctioned
- awarded
- disbursed by PFC
- Released by utility

Rs Crs

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<tr>
<th></th>
<th>sanctioned</th>
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<th>disbursed by PFC</th>
<th>Released by utility</th>
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<td>31.86</td>
<td>52.32</td>
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Rajasthan – Kota

SANC DATE : Mar 10

AWARD DATE : Aug 12

RTU Progress

FRTU Progress

Cash flow

Sanctioned
Awarded
Disbursed by PFC
Released by utility

Rs Crs

2.36
6.69
14.21
22.3
Rajasthan – Jodhpur

SANC DATE: Jun 10
AWARD DATE: Aug 12

**RTU Progress**

<table>
<thead>
<tr>
<th>S/S</th>
<th>RTU Installed</th>
<th>RTU(E to E)</th>
<th>Comm</th>
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<tbody>
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<td>49</td>
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**FRTU Progress**

<table>
<thead>
<tr>
<th>RMU+Sect</th>
<th>FRTU(E to E)</th>
<th>Comm</th>
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<tr>
<td>148</td>
<td>13</td>
<td>3</td>
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</table>

**Cash flow**

- Rs Crs
  - Sanctioned: 32.77
  - Awarded: 21.6
  - Disbursed by PFC: 9.83
  - Released by utility: 4.78
Rajasthan – Bikaner

SANC DATE: Mar 10
AWARD DATE: Aug 12

**RTU Progress**

- S/S
- RTU Installed
- RTU(E to E)
- Comm

**FRTU Progress**

- RMU+Sect
- FRTU(E to E)
- Comm

**Cash Flow**

- Rs Crs
  - sanctioned
  - awarded
  - disbursed by PFC
  - Released by utility
Rajasthan – Ajmer

SANC DATE: Mar 10

AWARD DATE: Aug 12

RTU Progress

S/S
RTU Installed
RTU(E to E)
Comm

FRTU Progress

RMU+Sect
FRTU(E to E)
Comm

Cash flow

Rs Crs
sanctioned
awarded
dischursed by PFC
Released by utility
ISSUES

- RTU/FRTU work to be expedited (especially in Jaipur DISCOM) and FRTU work in all 5 towns of Rajasthan
- Communication to be re-instated by Jaipur DISCOM
- Test & system documentation is pending
- SAT & Availability test (Date not given)
ODISHA
Odisha – Bhubneshwar & Cuttack

<table>
<thead>
<tr>
<th>SANC DATE</th>
<th>AWARD DATE</th>
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</thead>
<tbody>
<tr>
<td>Mar 14</td>
<td>Jan 15</td>
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</table>

**RTU Progress**

- S/S: 52%
- RTU Installed: 22%
- RTU (E to E): 15%
- Comm: 5%

**FRTU Progress**

- RMU + Sect: 110%
- FRTU (E to E): 0%
- Comm: 0%

**Cash flow**

<table>
<thead>
<tr>
<th>Rs Crs</th>
<th>Sanctioned</th>
<th>Awarded</th>
<th>Disbursed by PFC</th>
<th>Released by utility</th>
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<tr>
<td>8.99</td>
<td>15.94</td>
<td>26.57</td>
<td>27.85</td>
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</table>
Odisha

ISSUES

- Control building infra to complete by Nov 17.
- RTU/FRTU work to be expedited
- SAT & Availability test (FY 17-18)
PUDUCHERRY
SANC DATE: Feb 13

RTU Progress

- RTU Installed
- RTU (E to E)
- Comm

FRTU Progress

- RMU + Sect
- FRTU Installed
- FRTU (E to E)
- Comm

Cash flow

- sanctioned
- awarded
- disbursed by PFC
- Released by utility

Rs Crs

- 1.69
- 4.17
- 12.54
- 13.89

SANC DATE: Feb 13
AWARD DATE: Mar 15
ISSUES

- 80 RMU + 142 Sectionlizer are yet to be installed by utility
- 126 Sectionlizer are being procured by utility with built-in FRTU. Hence, Bid scheduled to open on 19 Oct.
- RTU/FRTU work to be expedited
- SAT & Availability test (Feb-Mar 18)
JHARKHAND
Jharkhand – Ranchi, Jamshedpur & Dhanbad

SANC DATE : Sep 13

RTU Progress

FRTU Progress

Cash flow

Rs Crs

sanctioned
awarded
disbursed by PFC
Released by utility
Jharkhand

ISSUES

- Control building infra to complete by Oct end
- RTU/FRTU & SCADA enabler work to be expedited
- SAT & Availability test (Date not given)
MAHARASHTRA
Maharashtra – Amravati

SANC DATE: Jun 11

AWARD DATE: Dec 11

RTU Progress

<table>
<thead>
<tr>
<th></th>
<th>S/S</th>
<th>RTU Installed</th>
<th>RTU (E to E)</th>
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FRTU Progress

<table>
<thead>
<tr>
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<th>RMU+ Sect</th>
<th>FRTU (E to E)</th>
<th>Comm</th>
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<tbody>
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<td>136</td>
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Cash flow

<table>
<thead>
<tr>
<th>Rs Crs</th>
<th>Sanctioned</th>
<th>Awarded</th>
<th>Disbursed by PFC</th>
<th>Released by utility</th>
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<tbody>
<tr>
<td>0</td>
<td>3.3</td>
<td>8.62</td>
<td>11.07</td>
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</table>
Maharashtra – Solapur

SANC DATE: Jun 11

AWARD DATE: Dec 11

RTU Progress

FRTU Progress

Cash flow

- Sanctioned
- Awarded
- Disbursed by PFC
- Released by utility
Maharashtra – Kolhapur

SANC DATE: Jun 11
AWARD DATE: Dec 11

RTU Progress

Cash flow

Rs Crs

- sanctioned
- awarded
- disbursed by PFC
- Released by utility
Maharashtra – Sangli

SANC DATE: Jun 11
AWARD DATE: Dec 11

RTU Progress

- S/S
- RTU Installed
- RTU(E to E)
- Comm

FRTU Progress

- RMU+Sect
- FRTU Installed
- FRTU(E to E)
- Comm

Cash flow

Rs Crs

- sanctioned
- awarded
- disbursed by PFC
- Released by utility
Maharashtra – Malegaon

SANC DATE: Jun 11

AWARD DATE: Dec 11

**RTU Progress**

- S/S
- RTU Installed
- RTU(E to E)
- Comm

**FRTU Progress**

- RMU+Sect
- FRTU(E to E)
- FRTU Installed
- Comm

**Cash flow**

- Rs Crs:
  - sanctioned: 8.03
  - awarded: 6.89
  - disbursed by PFC: 4.33
  - Released by utility: 2.41

- Time:
  - Jun 11
  - Dec 11
Maharashtra – Nashik

SANC DATE: Jun 11

AWARD DATE: Dec 11

RTU Progress

- S/S: 34
- RTU Installed: 34
- RTU(E to E): 22
- Comm: 22

Cash flow

- Rs Crs
  - sanctioned: 10.85
  - awarded: 7.71
  - disbursed by PFC: 6.11
  - Released by utility: 2.28
Maharashtra – Pune

SANC DATE : Jun 11
AWARD DATE : Dec11

RTU Progress

S/S  RTU Installed  RTU(E to E)  Comm

83  65  33  33

Cash flow

Rs Crs

0  5  10  15  20  25

sanctioned
awarded
disbursed by PFC
Released by utility
• Balance RTU /FRTU to be commissioned

• All system documentation incl Cyber security shall be completed

• SAT & Availability test done (Except Gr.Mumbai exptd by Dec 17 ). Nevertheless, performance and availability is recommended after completion of final FRTU/RTUs count .

• TPIEA-IT verification to be done
PUNJAB
Punjab– Jalandhar

SANC DATE: Nov 11

AWARD DATE: Feb 15

**RTU Progress**

- **S/S**: 20
- **RTU Installed**: 17
- **RTU (E to E)**: 17
- **Comm**:

**FRTU Progress**

- **RMU + Sect**: 30
- **FRTU (E to E)**: 30
- **FRTU Installed**:

**Cash flow**

- **Rs Crs**
  - **Sanctioned**: 11.13
  - **Awarded**: 4.55
  - **Disbursed by PFC**: 1.7
  - **Released by utility**:

---

**SANC DATE**: Nov 11

**AWARD DATE**: Feb 15
ISSUES

- RTU/FRTU work to be expedited
- Test & system documentation is pending
- SAT & Availability test (Date not given)
UTTARAKHAND
Uttarakhand – Dehradun

**SANC DATE:** Mar 12

**AWARD DATE:** Dec 14

### RTU Progress

- **S/S:** 23
- **RTU Installed:** 21
- **RTU(E to E):** 12
- **Comm:** 12

### FRTU Progress

- **RMU+Sect:** 364
- **FRTU Installed:** 259
- **FRTU(E to E):** 185
- **Comm:** 185

### Cash Flow

- **Rs Crs:**
  - sanctioned: 16.55
  - awarded: 21.26
  - disbursed by PFC: 8.25
  - released by utility: 4.72
Uttarakhand

ISSUES

- RTU/FRTU work to be expedited
- Part B enablers to be expedited
- Test & system documentation is pending
- SAT & Availability test (Jan 18)
ASSAM
ASSAM – Guwahati

ISSUES

- Control Centre with 16 S/S are functional
- Work in 6 S/S incl. Big Bazar to commence
- 8 S/S (compact substation) where (ABB-2, Schneider-5 Travida -1) make equipments were installed which needs to be integrated with RTU
- FRTUs E-to E test to be expedited
- Site Acceptance test & availability test by Feb 18.
WEST BENGAL
WB – Siliguri

RTU Progress

- SANC DATE: October’2011
- AWARD DATE: February’2013 [Chemtrols]

Cash flow

- Rs Crs
- S/S
- RTU Installed
- RTU(E to E)
- Comm

- sanctioned
- awarded
- disbursed by PFC
- released by utility
WB – Asansol

SANC DATE: October’2011
AWARD DATE: February’2013 [Chemtrols]

RTU Progress

- S/S
- RTU Installed
- RTU (E to E)
- Comm

Cash flow

- Rs Crs
- 0 2 4 6 8
- 0 2 4 6 8
- sanctioned
- awarded
- disbursed by PFC
- released by utility

SANC DATE: October’2011
Comm DATE: February’2013

Rs Crs
- 2.13
- 5.94
- 7.61
SANC DATE: October'2011

AWARD DATE: Sep. 2012 (Chemtrols)

**RTU Progress**
- S/S: 45%
- RTU Installed: 39%
- RTU(E to E): 1%
- Comm: 0%

**FRTU Progress**
- RMU: 69%
- FRTU(E to E): 19%
- Comm: 0%

**Cash flow**
- Rs Crs: 18.22
- sanctioned
- awarded: 13.41
- disbursed by PFC: 5.47
- released by utility: 5.21
ISSUES

- SAT completed for Siliguri, Asansol (1 S/S pending)
- SAT for Kolkata pending for FRTU end to End test (Reliance SIM inactive)
- Spare delivery and Training pending
- Software License Validity not made perpetual by SIA
- Availability test to be done & TPIEA-IT verification to commence
TELANGANA
Telangana - Warangal

SANC DATE: Mar 2011
AWARD DATE: Dec 12

**RTU Progress**

- S/S: 18
- RTU Installed: 18
- RTU (E to E): 18
- Comm: 18

**FRTU Progress**

- RMU + Sect: 160
- FRTU (E to E): 160
- FRTU Installed: 29
- Comm: 29

**Cash Flow**

- Rs Crs: 12.47
- sanctioned
- awarded: 10.52
- disbursed by PFC: 3.74
- released by utility: 2.34
Telangana - Hyderabad

SANC DATE: Jun 2011
AWARD DATE: Dec 12

RTU Progress

<table>
<thead>
<tr>
<th>S/S</th>
<th>RTU Installed</th>
<th>RTU(E to E)</th>
<th>Comm</th>
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<tbody>
<tr>
<td></td>
<td>228 227</td>
<td>121 121</td>
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FRTU Progress

<table>
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<th>RMU+Sect</th>
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<td>917</td>
<td>442</td>
<td>15</td>
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Cash flow

- Sanctioned: 65.15 Rs Crs
- Awarded: 31.52 Rs Crs
- Disbursed by PFC: 19.25 Rs Crs
- Released: 9.25 Rs Crs

Rs Crs: 0 10 20 30 40 50 60 70
Commissioning of FRTUs, Modems pending
FRTU Communication is a major bottleneck
GIS integration with SCADA/DMS pending.
Integration of DMS components with SCADA.
Insufficient manpower by SIA
SAT & Availability test (Mid Nov for Warangal & Date not given for Hyderabad)
TPIEA-IT verification to commence thereafter
AP - Vijaywada

**RTU Progress**

- **S/S**
- **RTU Installed**
- **RTU(E to E)**
- **Comm**

**FRTU Progress**

- **RMU+Sect**
- **FRTU Installed**
- **FRTU(E to E)**
- **Comm**

**Cash flow**

- **Rs Crs**
  - sanctioned
  - awarded
  - disbursed by PFC
  - Released

**SANC DATE:** Mar 11  
**AWARD DATE:** Jan 13
ISSUES

- Providing the NMS software license for all the nodes
- RTU /FRTU reboot /reset frequent occurrence
- FRTU modem hanging and all data of RMU not getting transmitted..
- No RTU/FRTU work in Nellore is progressing
- Test & system documentation is pending
- SAT & Availability test ( Date not given )
GUJARAT
Gujarat - Ahmedabad

SANC DATE: Dec 10
AWARD DATE: Apr 13

RTU Progress

FRTU Progress

Cash flow

- sanctioned
- awarded
- disbursed by PFC
- Released by utility

Rs Crs

- 5.36
- 10.15
- 21.66
- 33.82
Gujarat - Vadodara

SANC DATE: Dec 10
AWARD DATE: Apr 13

**RTU Progress**

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**FRTU Progress**

<table>
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<th>RMU+SECT</th>
<th>FRTU Installed</th>
<th>FRTU(E to E)</th>
<th>Comm</th>
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</table>

**Cash Flow**

- **Rs Crs**
  - sanctioned: 26.18
  - awarded: 18.6
  - disbursed by PFC: 7.85
  - Released by utility: 4.9

**SANC DATE:** Dec 10
**AWARD DATE:** Apr 13
Gujarat - Surat

SANC DATE: Dec 10
AWARD DATE: Apr 13

RTU Progress

- S/S: 24
- RTU Installed: 24
- RTU(E to E): 1
- Comm: 0

FRTU Progress

- RMU+SECT: 292
- FRTU(E to E): 0
- FRTU Installed: 0
- Comm: 0

Cash flow

- Rs Crs:sanctioned 4.45, awarded 3.21, disbursed by PFC 11.73, released by utility 14.84
Gujarat - Rajkot + Bhavnagar + Jamnagar

**SANC DATE:** Dec 10

**AWARD DATE:** Apr 13

### RTU Progress

- **S/S:** 32
- **RTU Installed:** 30
- **RTU(E to E):** 4
- **Comm:** 4

### FRTU Progress

- **RMU+SECT:** 1314
- **FRTU(E to E):** 425
- **Comm:** 0

**Cash flow**

- **Sanctioned:** 63.77
- **Awarded:**
  - Rs Crs: 19.5
  - 19
- **Disbursed by PFC:** 43.83
- **Released by utility:**
  - 0
  - 0

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75
ISSUES

- NBSP is not able to deliver the pending links at RTU and all FRTU locations
- Halting RTU/FRTU Work in all places except Vadodara
- Test & system documentation is pending
- SAT & Availability test (Date not given)
KERALA
ISSUES

- Control building infra to complete
- RTU/FRTU & SCADA enabler work to be expedited
- SAT & Availability test (FY 17-18)
BIHAR
Bihar – Patna

SANC DATE: Nov 11

AWARD DATE: Dec 12

RTU Progress

FRTU Progress

Cash flow

Rs Crs

sanctioned
awarded
disbursed by PFC
Released by utility
ISSUES

- RTU/FRTU & SCADA enabler work to be expedited
- SAT & Availability test to be expedited thereafter
ISSUES

- Absolutely standstill since long and at the yet to commence.
- Decision to be taken.
CHATTISGARH
Chattisgarh

ISSUES

- FRTU not supplied till date by SIA
- Compatibility issue with relays over IEC 103 protocol
- Inadequate team deployment by SIA