**3GPP TSG RAN WG2 Meeting #120 R2-2212xxx
Toulouse, France, 14th – 18th Nov. 2022**

**Agenda item: 8.3.4**

**Source: Apple**

**Title: [PRE120][303][NES] Summary of Cell (Re)selection – 8.3.4 (Apple)**

**WID/SID: FS\_Netw\_Energy\_NR– Release 18**

**Document for: Discussion and Decision**

# 1 Introduction

This is summary for 16 contributions in AI 8.3.4 list in References.

According to guideline from Session Chair, Rapporteur would like to first clarify below key points:

1. Focus on essential issues related to completion of Study Item, including:
	* FFSs captured in TR [1]:

*Editor's note: FFS whether to keep the terminology of “NES cells” and its definition, or change it to“a cell that uses an NES technique”.*

*Editor's note: FFS the exact mechanism and the spec impacts.*

*Editor's note: FFS whether the existing mechanism for cell prioritization/de-prioritization is sufficient.*

* + Identified open list in post-meeting email discussion [2]:

**List of remaining issues on cell selection/reselection:**

**(De)prioritize NES cells by NES capable UEs:**

* 1. **Whether de-prioritization is sufficient for NES cells, or even prioritization of NES cells need to be supported**
	2. **Applicability of existing mechanisms, e.g. frequency priorities, cell offset to (de)prioritize cells**
	3. **Potential new mechanism description, and potential specification impacts**
	4. **Mechanisms to incentivize and disincentivize NES-capable UEs from camping on cells according to their NES states**
1. Identify solution options necessary to be discussed in study item phase
2. Identify solution details to be discussed normative phase

# 2 Discussion

## 2.1 Terminology of "NES cell"

This is to address below FFS in TR [1]:

*Editor's note: FFS whether to keep the terminology of “NES cells” and its definition, or change it to“a cell that uses an NES technique”.*

Below table summarized related company contributions:

|  |  |  |
| --- | --- | --- |
| Tdoc# | Source  | Related proposals |
| [5] [R2-2211666](file:///Users/chengpeng/Documents/3GPP/Meeting/RAN2-120/Review/Docs/R2-2211666.zip) | vivo | **Proposal 1: Keep the terminology of “NES cells” with the definition of NES-capable UE. Can discuss whether to change the definition when specific NES technique is agreed.**  |
| [9] [R2-2212053](file:///Users/chengpeng/Documents/3GPP/Meeting/RAN2-120/Review/Docs/R2-2212053.zip)  | Lenovo | **Proposal 2: A NES cell can be defined as a cell which supports any of the NES means including supports different levels of energy savings by different levels of sleep and supports dynamic/semi-static transition among different levels of energy savings.** |
| [13] [R2-2212315](file:///Users/chengpeng/Documents/3GPP/Meeting/RAN2-120/Review/Docs/R2-2212315.zip)  | Ericsson | Proposal 1 To avoid confusion between "a NES Cell" and "an SCell", use the term "an EE Cell", where “EE” stands for “Energy Efficiency”. |
| [14] [R2-2212325](file:///Users/chengpeng/Documents/3GPP/Meeting/RAN2-120/Review/Docs/R2-2212325.zip) | InterDigital | **Proposal 3**: The definition of an NES cell is “a cell that is configured to use an NES technique” |
| [17] [R2-2212871](file:///Users/chengpeng/Documents/3GPP/Meeting/RAN2-120/Review/Docs/R2-2212871.zip) | Huawei | ***Proposal 1: Add a general*** ***clarification of “NES cell refers to the cell that uses NES technique(s)” and remove the Editor’s Note on the definition of NES cell.*** |

Based on above proposal, Rapporteur's observation is:

* Majority prefer to keep the terminology of "NES cell" in TR and add clarification on its RAN2 understanding ([5] [9][14][17]).
* Its formal definition can be discussed in normative phase.

Rapporteur have the same understanding as majority. In addition, Rapporteur also think RAN2 can't conclude the formal definition at this stage because it is also related to RAN1/RAN4 progress. Thus, Rapporteur suggest to keep "NES cell" in TR with some clarification on its RAN2 understanding in the Editor's Note. Then, the FFS can be removed. As example, the Editor Note can be modified as:

*Editor's note: ~~FFS whether to keep the terminology of~~ RAN2 understanding on“NES cells” is ~~and its definition, or change it to~~“a cell that uses an NES technique”. Its formal definition can be discussed in normative phase.*

**Proposal 1: Keep the terminology of "NES cell" in the TR. In Editor's Note, capture clarification on its RAN2 understanding and its formal definition can be discussed in normative phase. Remove the FFS on definition.**

Meanwhile, Rapporteur observe there are diverse options on its RAN2 understanding:

* **Understanding 1: A cell which is currently using Rel-18 specified NES technique ([14][17])**
	+ **It can be regarded as a state of cell (e.g. NES state)**
	+ **With this understanding, the UE may require to identify whether the cell is in NES state via SIB as discussed in [14][18]**
* **Understanding 2: A cell which supports one or more Rel-18 specified NES technique ([5][9][13])**
	+ **It can be regarded as one type of cell (i.e. NES capable cell)**
	+ **The cell is still regarded as NES cell, even when it doesn't use Rel-18 specified NES technique in some duration.**
	+ **With this understanding, the UE can just follow NW configured NES cell list as discussed in [5] or don't need to timely check cell state, irrespective of whether the cell is in NES state or not.**

Rapporteur think this issue should be discussed in this meeting because it is essential and also related to whether / how the NES capable UE identify a "NES cell". As can be seen from below table, some companies proposed solution based on understanding 1 (i.e. the UE needs to identify cell NES state which may change dynamically) and other others are based on understanding 2 (i.e. the UE follows Network configured NES cell list in SIB/RRC release).

|  |  |  |
| --- | --- | --- |
| Understanding 1 | Source  | Related proposals |
| [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) (Qualcomm) | **Proposal 4: NES-aware Cell reselection balances the following two objectives:**1. **NES-state of the cell, i.e, UE is discouraged from accessing a sleeping cell if a comparable non-sleeping cell is measured.**
2. **Cell-level radio quality, a UE does not select a non-sleeping cell if a sleeping cell has much better radio quality.**
 |
| R2-2212325(InterDigital) | **Proposal 1**: An NES-capable UE can be configured to apply a negative offset to the signal level measurement of an NES cell for cell (re)-selection suitability determination, depending on the cell’s NES state. How these offsets are configured is FFS.  |
| Understanding 2 | R2-2211666(vivo) | **Proposal 4: for (de)prioritization NES cells, capture the below spec impact:** * **Configure separate cell offset for NES cells in SIB or dedicated signalling;**
* **NES cells are indicated to the UE via SIB or dedicated signalling.**
 |
| R2-2211955 (OPPO) | **Proposal 3 In the case that both the legacy UE and the NES-capable UE can (re)select the NES cell, RAN2 considers to introduce cell-level NES-specific cell (re)selection parameters to have individual handling for the UEs with/without the NES capability.** |

**Proposal 2: Down-select below 2 RAN2 understanding of "NES cell" for cell (re)selection:**

* **Understanding 1: A cell which is currently using Rel-18 specified NES technique**
* **Understanding 2: A cell which supports one or more Rel-18 specified NES technique (i.e. it is still regarded as NES cell, even when it doesn't apply Rel-18 specified NES technique in some duration)**

## 2.2 Legacy UE handling

In TP [1], below text is captured related to legacy UE handling:

For backward compatibility, there is a need to allow NES cells to prevent legacy UEs from camping. NES cells should be able to configure whether to prevent legacy UEs, while allowing NES-capable UEs to camp on. Possible solutions may include but not limited to:

 - Use *IntraFreqExcludedCellList*/*InterFreqExcludedCellList*

 - Use the *cellBarred* or cell reservation fields in MIB/SIB

*Editor's note: FFS the exact mechanism and the spec impacts.*

And below table summarized proposals on the discussion of its details.

|  |  |  |
| --- | --- | --- |
| Tdoc# | Source  | Related proposals |
| R2-2211591 | Qualcomm | **Proposal 1: A cell applying NES techniques incompatible with legacy can us existing options in the spec to prevent legacy UEs from camping, e.g.,** 1. **Use Intra/InterFreqExcludedCellList**
2. **Use cellBarred or cell reservation fields in MIB/SIB**
 |
| R2-2211666  | vivo | **Proposal 2: For solution (Use *IntraFreqExcludedCellList*/*InterFreqExcludedCellList*), capture the below spec impact in the TP:*** **NES-capable UE ignores legacy *IntraFreqExcludedCellList*/*InterFreqExcludedCellList;***
* **Additional information is added to indicate the black lists for NES-capable UEs for cell reselection.**

**Proposal 3: For solution (Use the *cellBarred* or cell reservation fields in MIB/SIB), capture the below spec impact in the TP:*** **If cellBarred in MIB is set to barred, NES-capable UE ignores itbut uses cell bar in SIB1;**
* **If cellBarred in MIB is set to notBarred, NES-capable UE considers the cell as not barred or still uses cell bar in SIB1.**
 |
| R2-2212116 | Intel | **Proposal#1:** Only include CellReservedForOtherUse/CellReservedForFutureUse to prevent legacy UEs camping on NES cells in the WI phase.**Proposal#1-1:** Introduce 2 further bits in SIB1:* 1 bit to enable NPN only NES cell to bar non-NPN but NES capable UEs
* 1 bit to enable future type cell to bar NPN only but NES capable UEs
 |
| R2-2212919 | LG | **Proposal 1**: NES cell can set cellBarred in MIB to *barred* in order to prevent legacy UEs from accessing NES cells. NES capable UEs ignores cellBarred. **Proposal 2**: Introduce a new cell barring field in SIB1 only applicable to NES capable UEs. If this field is set to barred, NES capable UEs shall consider this cell as barred. **Proposal 3**: RAN2 assumes that configuring xxxExcludedCellList including NES cells to help legacy UEs avoid reselecting NES cells is not essential.  |

Rapporteur think current TR has clearly captured the motivation and 2 option solutions. Meanwhile, company contributions focus on discussion of solutions details and no new option solutions are proposed. Rapporteur tend to think current TR is sufficient to conclude SI, and companies can further discuss solution details in normative phase. Thus, Rapporteur suggest below proposal:

**Proposal 3: For legacy UE barring mechanism, current TR is sufficient to conclude SI, and solution details should be discussed in normative phase. Remove the FFS on exact mechanism and spec impacts.**

## 2.3 NES capable UE handling

In last RAN2 meeting, below agreement was made:

1. The network should be able to configure NES capable UEs to (de)prioritize NES cells. mechanism such as can be considered for both frequency and cell levels cell selection/reselection (de)prioritization. FFS on whether the existing mechanism is sufficient.

The open issues include scenario and whether new solution is needed.

### 2.3.1 Scenario

We address below open issue in this subsection:

* 1. **Whether de-prioritization is sufficient for NES cells, or even prioritization of NES cells need to be supported**

Basically, there are two views:

* **View 1: de-prioritization of NES cells is sufficient**
	+ The motivation includes
		- Save energy for NES cells, from NW perspective
		- Avoid performance degradation of NES capable UE, from UE perspective
* **View 2: NW can configure either prioritization or de-prioritization of NES cells**
	+ The motivation of prioritization of NES cells includes
		- Cell loading balancing, especially if NES cells don't bar legacy UEs
	+ It provides more flexibility to NW if whether prioritization or de-prioritization is configurable.
	+ If de-prioritization is supported, there is no technique barrier to support prioritization.

Company view in RAN2 contribution are summarized in below table:

|  |  |  |
| --- | --- | --- |
| View 1 | Source  | Related proposals |
| [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) (CATT) | **Proposal 2: For cell reselection, it is sufficient for the network to be able to configure NES-capable UEs to de-prioritize a specific NES cell or NES cells on a specific frequency with existing mechanism.** |
| View 2 | R2-2211666(vivo) | **Proposal 4: for (de)prioritization NES cells, capture the below spec impact:** * **Configure separate cell offset for NES cells in SIB or dedicated signalling;**
* **NES cells are indicated to the UE via SIB or dedicated signalling.**
 |
| R2-2211955(OPPO) | **Proposal 4 RAN2 assumes to rely on the network strategies or implementation on whether/when to prioritize or deprioritize the NES cell for the NES-capable UEs.** |
| R2-2211681(Apple) | **Proposal 2: Based on exchanged load information of legacy cells via existing inter-node signaling, NW may determine and configure NES capable UEs to de-prioritize or prioritize NES cells during cell (re)selection.**  |
| R2-2211060(Samsung) | **Proposal 1. gNB configures whether NES-capable UE prioritizes NES cell over non-NES cell.** |
| R2-2212871(Huawei) | ***Proposal 3: New mechanisms to support de-prioritization of NES cells, e.g. separate configurations of cell (re)selection parameters for legacy UEs and NES-capable UEs in the system information, can be considered. The new mechanisms should avoid hard-coding the prioritization level for NES cells.*** |

As can be observed, only 1 company supports view 1 and it seems all other companies support view 2. Meanwhile, please note that current TR has captured " The network should be able to configure NES capable UEs to (de)prioritize NES cells ". Thus, to make progress, Rapporteur suggest to keep the current text of TR:

**Proposal 4: Confirm the network should be able to configure NES capable UEs to whether prioritize or de-prioritize NES cells over legacy cells.**

### 2.3.2 Solution

It is FFS whether the existing cell (re)selection mechanism is sufficient.

1. The network should be able to configure NES capable UEs to (de)prioritize NES cells. mechanism such as can be considered for both frequency and cell levels cell selection/reselection (de)prioritization. FFS on whether the existing mechanism is sufficient.

Based on company contribution, there are 3 options identified:

* **Option 1: The existing cell (re)selection mechanism is sufficient**
	+ Justifications include: the legacy cell (re)selection can configure cell offset (e.g. Qoffset) and/or frequency priority to prioritize or deprioritize NES cells for cell reselection, especially if the network don't need to apply different prioritization policy for legacy UEs and NES capable UEs.
* **Option 2: Introduce a new set of NES-capable UE dedicated cell (re)selection parameters. Details of the set of dedicated parameters can be discussed in normative phase.**
	+ For example, the dedicated parameters may include Qoffset, frequency priority, excluded cell list or offset to measurements, *etc*. Whether only one of them or multiple parameters can be discussed in WI.
	+ Its signaling (e.g. in SIB and/or in RRC release) is stage 3 issue which doesn't need to be discussed in study item phase. Thus, Rapporteur don't mention it.
* **Option 3: Introduce a NES-capable UE dedicated barring mechanism.**

Company view in RAN2 contribution are summarized in below table:

|  |  |  |
| --- | --- | --- |
| Option 1 | [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) (CATT) | **Proposal 1: For cell selection, there is no need to consider mechanisms to deprioritize or prioritize NES cells for NES-capable UEs.****Proposal 2: For cell reselection, it is sufficient for the network to be able to configure NES-capable UEs to de-prioritize a specific NES cell or NES cells on a specific frequency with existing mechanism.** |
| R2-2211060(Samsung) | **Proposal 2. Additional mechanism to incentivize NES-capable UEs camping on cells is not necessary.**  |
| R2-2212116(Intel) | **Proposal#2:** No further enhancement is required for down prioritisation of NES cell for NES capable UE. |
| R2-2212315(Ericsson) | Proposal 2 There is no need for dedicated mechanisms for (de)prioritizing EE cells among NES-capable UEs. |
| Option 2 | [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) (Qualcomm) | **Proposal 3: Network can influence UE cell (re)selection based on a two-step procedure as follows:**1. **Legacy Inter-frequency Prioritization**
2. **NES-aware Intra-freq or equal freq ranking Cell (re)selection**

**Proposal 5: RAN2 to discuss how to achieve NES aware cell ranking.**  |
| R2-2211666(vivo) | **Proposal 4: for (de)prioritization NES cells, capture the below spec impact:** * **Configure separate cell offset for NES cells in SIB or dedicated signalling;**
* **NES cells are indicated to the UE via SIB or dedicated signalling.**
 |
| R2-2211955(OPPO) | Proposal 3: In the case that both the legacy UE and the NES-capable UE can (re)select the NES cell, RAN2 considers to introduce cell-level NES-specific cell (re)selection parameters to have individual handling for the UEs with/without the NES capability. |
| R2-2211681(Apple) | **Proposal 5: For frequency level (de)prioritization, capture below candidate solutions to be considered in TR:*** **Alt-2: Introduce a NES dedicated frequency priority list in SIB. NES capable UEs apply this frequency priority and ignore legacy priority in SIB.**

**Proposal 6: For cell level (de)prioritization, capture below candidate solutions to be considered in TR:*** **Alt-1: Introduce NES cell dedicated offset for cell ranking criteria R (e.g. Qoffset in clause 5.2.4.6 of TS 38.304).**
* **Alt-2: Introduce NES cell dedicated offset for its measurements (e.g. RSRP, RSRQ, Qhyst)**
 |
| R2-2212183(ZTE) | **Proposal 3: Whether to prioritize NES frequency for NES-capable UE cell re-selection depends on the whether QoffsetNES-Freq is configured for the frequency, and if configured, QoffsetNES-Freq is used to prioritize NES frequency for NES-capable UE cell re-selection.** |
| InterDigital | **Proposal 1**: An NES-capable UE can be configured to apply a negative offset to the signal level measurement of an NES cell for cell (re)-selection suitability determination, depending on the cell’s NES state. How these offsets are configured is FFS.  |
| R2-2212871(Huawei) | ***Proposal 3: New mechanisms to support de-prioritization of NES cells, e.g. separate configurations of cell (re)selection parameters for legacy UEs and NES-capable UEs in the system information, can be considered. The new mechanisms should avoid hard-coding the prioritization level for NES cells.*** |
| R2-2212919(LG) | **Proposal 6**: If RAN2 agrees to support differentiated cell reselection prioritization policy for legacy UEs and forNES capable UEs respectively, introduce a new Qoffset (e.g., QoffsetNES) dedicated to NES capable UEs. NES capable UEs ignore existing Qoffset but apply QoffsetNES instead.  |
| R2-2211967(Nokia) | **Proposal 1:** As a baseline to handle reselection steering to/out of NES cells: theNES capable UEs could derive different excluded list than the legacy UE does based on *Intra/InterFreqExcludedCellList*. |
| Option 3 | [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) (Qualcomm) | **Proposal 2: RAN2 to define dedicated IEs for barring and blocklisting NES capable Rel-18 UEs to not impact barring/blocklisting behavior of legacy UEs** |
| R2-2211967(Nokia) | **Proposal 2:** To control cell camping on NES cells: Agree to introduce NES specific cell barring mechanism |

Thus, Rapporteur suggest RAN2 to discuss which option(s) to conclude SI. Note that option 2 and option 3 are not mutual exclusive.

**Proposal 5: On how NES capable UEs to (de)prioritize NES cell, RAN2 discuss which option(s) to conclude SI:**

* **Option 1: The existing cell (re)selection mechanism is sufficient**
* **Option 2: Introduce a new set of NES-capable UE dedicated cell (re)selection parameters. Details of the set of dedicated parameters can be discussed in normative phase**
* **Option 3: Introduce a NES-capable UE dedicated barring mechanism**

## 2.4 Others

There are some other proposals beyond the left FFS and agreed open issue list. Following Session Chair guideline mentioned from beginning of this summary, Rapporteur suggest to treat them with below principle:

1. Only issue / solution proposed by at least two companies are captured in summary proposal for discuss.
2. Proposals related to specific NES technique (e.g. SIB-less, WUS) are not in scope of cell (re)selection. Proponents may contact Rapporteur of corresponding AI (e.g. SIB-less or others) for possible handling.

### 2.4.1 NES specific measurement

Both vivo and InterDigital proposed NES specific measurement:

|  |  |  |
| --- | --- | --- |
| Tdoc# | Source  | Related proposals |
| R2-2211666 | vivo | **Proposal 5: To allow the NES UE not start intra/inter frequency cell reselection measurement when legacy conditions are fulfilled, when camping on NES cell. Capture the below spec impact in the TP:*** **NES-capable UE may not start intra/inter frequency cell reselection measurement when legacy condition is fulfilled.**
* **Configure new intra/inter frequency cell reselection measurement condition (threshold) for NES-capable UE. NES-capable UE starts intra/inter frequency cell reselection measurement when new condition is fulfilled.**
 |
| R2-2212325 | InterDigital | **Proposal 2**: An NES-capable UE can be configured to apply negative offsets to signal level measurements of the serving NES cell to start intra-frequency or inter-frequency/inter-RAT neighbour cell measurements when the camped cell enters NES mode. How these offsets are configured is FFS.  |

So based on principle 1), Rapporteur suggest RAN2 to discuss this solution. Similarly, only high level option description is captured with the assumption that the details can be discussed in normative phase if agreed by RAN2.

**Proposal 6: RAN2 discuss whether NES-capable UE can be configured to apply dedicated threshold to start intra-frequency or inter-frequency/inter-RAT neighbors cell measurements when camping in NES cell.**

### 2.4.2 Other proposals

The below proposals are not captured in summary proposal with Rapporteur's explanation.

|  |  |  |  |
| --- | --- | --- | --- |
| Tdoc# | Source  | Related proposals | Rapporteur explanation |
| [R2-2211445](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211445.zip) | CATT | **Proposal 4: An alternative, for achieving load balancing between NES cells and normal cells in RRC\_IDLE/RRC\_INACTIVE state, is to let the network allow the UE to camp on a normal cell but access with the network via an NES cell directly.** | It is out of scope (on specific NES technique) |
| [R2-2211591](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211591.zip) | Qualcomm | **Proposal 6: WUS and DRS, if agreed, can be combined with the NES-aware cell selection/ranking procedure to obtain an overall UE cell selection mechanism for NES cells.** | It is out of scope (on specific NES technique) |
| [R2-2211967](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2211967.zip)  | Nokia | **Proposal 3:** RAN2 should study how the network can control accesses in the NES utilizing gNB effectively. | Solution proposed by only 1 company |
| [R2-2212053](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2212053.zip) | Lenovo 1 | **Proposal 3: The NES UE may select/reselect the strongest NES cell on the highest priority frequency.** | Solution proposed by only 1 company |
| [R2-2212183](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2212183.zip) | ZTE | **Proposal 1: For cell selection and re-selection issue related to NES for NR, SSB-less and SIB-less cell is not considered.****Proposal 2: For cell selection and re-selection issue related to NES for NR, the cell supporting cell specific DTX/DRX and mobility enhancements for NES etc can be considered.** | It is out of scope (on specific NES technique) |
| [R2-2212796](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2212796.zip) | DCM | **Proposal 1. RAN2 to confirm it is useful for UEs which operate applications to send a request to the NW about the preferred NW DTX/DRX pattern (i.e., DTX periodicity and DRX periodicity) as UEAssistanceInformation in order to de-prioritize the cell which DTX/DRX pattern is not met with preferred by UE.** | It is out of scope (on specific NES technique) |
| [R2-2212867](file:///Users/chengpeng/Library/Containers/com.apple.mail/Data/Library/Mail%20Downloads/9B6D676E-2014-408D-B63F-FB36E3A10AF3/Docs/R2-2212867.zip) | Lenovo 2 | **Proposal: RAN2 kindly consider the Query – Response procedure for Idle Mode UEs towards realizing energy saving in non-peak hours.** | Solution proposed by only 1 company |

# 3 Conclusion

Based on company contributions submitted in AI 8.3.4, below summary proposals are suggested:

Terminology of "NES cell"

**Proposal 1: Keep the terminology of "NES cell" in the TR. In Editor's Note, capture clarification on its RAN2 understanding and its formal definition can be discussed in normative phase. Remove the FFS on definition.**

**Proposal 2: ~~Down-select~~ Discuss whether to capture one of below 2 RAN2 understanding of "NES cell" for cell (re)selection in the TR:**

* **Understanding 1: A cell which is currently using Rel-18 specified NES technique(s)**
* **Understanding 2: A cell which supports one or more Rel-18 specified NES technique (i.e. it is still regarded as NES cell, even when it doesn't apply Rel-18 specified NES technique in some duration)**

Legacy UE handling

**Proposal 3: For legacy UE barring mechanism, current TR is sufficient to conclude SI, and solution details should be discussed in normative phase. Remove the FFS on exact mechanism and spec impacts.**

NES capable UE handling

**Proposal 4: Confirm the network should be able to configure NES capable UEs to whether prioritize or de-prioritize NES cells over legacy cells.**

**Proposal 5: On how NES capable UEs to (de)prioritize intra-frequency and/or inter-frequency NES cell, RAN2 discuss which option(s) to conclude SI:**

* **Option 1: The existing cell (re)selection mechanism is sufficient**
* **Option 2: Introduce a new set of NES-capable UE dedicated cell (re)selection parameters. Details of the set of dedicated parameters can be discussed in normative phase**
* **~~Option 3: Introduce a NES-capable UE dedicated barring mechanism~~**

**Proposal 6: Discuss whether to introduce a NES capable UE dedicated barring mechanism.**

**Lower priority**

**Proposal ~~6~~7: RAN2 discuss whether NES-capable UE can be configured to apply dedicated threshold to start intra-frequency or inter-frequency/inter-RAT neighbors cell measurements when camping in NES cell.**

# 4 Draft TP

TBD based on agreements

# 5 References

[1] R2-2211427, TP on cell selection／reselection and SSB／SIB-less

[2] R2-2210995, Report of [Offline-302][NES] Cell Selection/Reselection and SSB/SIB-less (Huawei)

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